2005 0500

FIREBAUGH GENERAL PLAN
POLICY DOCUMENT

Prepared For

City of Firebaugh
1575 Eleventh Street
Firebaugh, CA 93622

Prepared By

Michael Paoli and Associates
Environmental, School Facility, and City Planning
600 West Shaw Avenue, Suite 240
Fresno, California 93704
(209) 224-4806

September 1992

TABLE OF CC

TABLE OF CONTENTS

SECTION IX SCENIC RESOURCES AND URBAN DESIGN

INTRODUCTION

1. THE CITY OF FIREBAUGH

The City of Firebaugh is located on Highway 33 at the northern edge of Fresno County. It is approximately 29 miles west of the Fresno-Clovis Metropolitan Area and 18 miles east of Interstate 5. The City was incorporated in 1914.

2. PURPOSE AND NATURE OF THE GENERAL PLAN

State law requires that every city and county adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which . . .bears relation to its planning." Once adopted, the general plan becomes the city's official policy statement regarding the character and quality of growth and development within the city's sphere of influence. Although time horizons for general plans may vary, the typical general plan provides guidance for development for ten to twenty years into the future.

The State of California has identified seven elements that every city must include in its general plan. These elements are land use, circulation, housing, conservation, open space, noise, and safety. The plan must identify and analyze issues of importance to the community, set forth goals and polices in text and diagrams for conservation and development, and outline specific programs for implementing these goals and policies.

The preparation, adoption, implementation, and maintenance of a general plan serves several purposes:

- To identify the city's environmental, economic, and social goals and policies;
- to provide a basis for local decision making, including a nexus to support development exactions;
- to record the city's policies and standards for the maintenance and improvement of existing development and the location and characteristics of future development;
- to provide citizens with opportunities to participate in the planning and decision-making processes of local government;

- to inform citizens, developers, decision makers, and other cities and counties of the ground rules that will guide development within the City.

Firebaugh's general plan was prepared in response to requirements of state law and a recognition by the City of the need to update and document its decisions concerning the future growth and development of the community. The *Firebaugh General Plan* contains all of the required elements.

The *Firebaugh General Plan* has been designed to provide guidance for the next twenty years. It is recognized, however, that the plan will have to be evaluated regularly and updated as necessary to reflect new opportunities, conditions, and attitudes of the community. To be effective, the plan should be reviewed on a yearly basis and thoroughly evaluated at least every five years.

3. PREPARATION OF THE GENERAL PLAN

In January 1991, the City of Firebaugh began a comprehensive update of its General Plan. The City retained Michael Paoli and Associates (MPA) to assist in the review and update of the General Plan. Michael Paoli and Associates, in turn, retained Brown-Buntin Associates, Inc., Consultants in Acoustics and Robert Winter, Biologist, to assist in the review and update of the noise and conservation (vegetation and wildlife) elements, respectively, of the General Plan.

MPA met monthly with a General Plan Advisory Committee during 1991. The Advisory Committee was composed of members of the Firebaugh City Council and Firebaugh Planning Commission. The general public and interested and concerned agencies were regularly notified of the Advisory Committee meetings and were invited to attend and participate in the General Plan update.

The first phase in the General Plan update was the preparation of a detailed Background Report which described existing conditions and trends in Firebaugh. The Background Report described and analyzed land use, population, economic conditions and fiscal considerations, transportation and circulation, public facilities and services, recreational and cultural resources, natural resources, health and safety, and scenic resources and urban design. Existing conditions related to housing were also described and analyzed, but in a separate document, the *1991 Firebaugh Housing Element.*

The second phase of the process was the development of the goals, policies, and implementation measures for the General Plan. During this phase, the General Plan Advisory Committee, City Staff, and MPA worked together to formulate goals, objectives, policies, and implementation measures to direct the City's future growth and development. During this period, alternative land use options were considered, with the General Plan Advisory Committee providing final direction on the land use alternatives to be included on the draft General Plan

map. Finally, at the direction of the Committee, MPA prepared the draft General Plan Policy Document, including the draft land use and circulation map.

4. ORGANIZATION OF THE DRAFT GENERAL PLAN

The *Draft Firebaugh General Plan* is divided into three documents: the *Draft General Plan Background Document*, the *Draft General Plan Policy Document*, and the *Draft 1991 Housing Element*. The Background Document provides the supporting data for the *General Plan Policy Document*. It inventories and describes resources and conditions in nine subject areas: land use, population, economic resources and fiscal considerations, circulation and transportation, public facilities and services, natural resources, recreational and cultural resources, health and safety, and scenic resources and urban design.

The *General Plan Policy Document* presents the City's goals, policies, implementation measures, standards, and draft land use and circulation plan that define the formal policy of the City of Firebaugh for land use, development, and environmental quality. These terms are defined as follows:

> Goal. A goal is an ideal future end, condition, or state related to the public health, safety, or general welfare and is usually expressed in terms of community values. It generally is abstract and not measurable.
>
> Policy. A policy is a specific statement, either in text or diagram form, that guides decision making. It indicates a clear and unambiguous commitment by the City Council. It can be effectuated by implementation measures.
>
> Standard. A rule or measure establishing a level of quality or quantity that must be complied with or satisfied. Standards define the abstract terms of goals, objectives, and policies with concrete specifications. They can often be used directly as regulatory controls.
>
> Implementation Measure. An action, procedure, program, or technique that carries out General Plan policy. Implementation measures include not only the action, procedure, program, or technique, but also the responsible agency for carrying out the measure and a time frame within which it should be accomplished.

The *Draft General Plan Policy Document* contains the land use and circulation diagram and standards and General Plan and zoning consistency matrix, as well as the goals, policies, and implementation measures for the General Plan.

Goals, policies, and implementation measures are established for land use; transportation and circulation; public facilities and services; recreational and cultural resources; natural resources; health and safety; city design, structure, and aesthetics; and administration and implementation of the General Plan.

The *1991 Housing Element* has been prepared as a separate document. State law requires that it be updated every five years and there are specific requirements related to information and review which are not included for other elements. The Housing Element includes a review and evaluation of background data related to existing housing and existing and future housing needs in the City. It contains goals, objectives, quantified objectives, and implementation measures related to housing.

In addition to these three documents, a Draft Environmental Impact Report (EIR) analyzing the impacts and implications of the Draft General Plan will be prepared. The Draft EIR, which is not a formal part of the Draft General Plan, will be prepared to meet the requirements of the California Environmental Quality Act.

LAND USE AND CIRCULATION DIAGRAM AND STANDARDS

1. INTRODUCTION

The land uses and circulation system proposed for the Firebaugh Sphere of Influence (SOI) are shown on the Land Use and Circulation Diagram (see attachment). The allowable uses and standards for each of the land use designations shown on the diagram are presented in Subsection 2, below, and the zoning districts that are consistent with each land use designation are presented in Subsection 3. The definitions and standards for the circulation system are presented in Subsection 4.

2. LAND USE DIAGRAM AND STANDARDS

a. General

The densities of the residential land use designations established by the draft general plan are generally defined in terms of housing units per acre. Standards of population density for residential uses can be derived by multiplying the maximum allowable number of dwelling units per gross acre by the average number of persons per dwelling unit assumed for the applicable residential designation. The assumed number of persons per dwelling unit for residences in Firebaugh has been determined to be 3.77 by the California Department of Finance.

Standards of building intensity for non-residential uses are stated as maximum floor-area ratios (FARs). A FAR is determined by dividing the square footage of a building by the square footage of the lot on which it is located. For example, a lot 10,000 square feet in size, with a FAR of 1.0, would allow 10,000 gross square feet of building floor area to be built. The same lot, with a FAR of 1.5, could be developed with a maximum 15,000-square-foot building and with a FAR of 0.5, could be developed with a maximum 5,000-square-foot building.

b. Residential

(1) Residential Reserve

The residential reserve designation is applied to land within the SOI planned for development with residential uses beyond the time frame of the General Plan (2012).

(2) Rural Residential

The rural residential designation provides for existing development on rural residential parcels within Firebaugh's SOI. Parcels range in size from 6,000 square feet to 5 acres. Residential density shall be one unit per parcel. Parcels designated as rural residential shall not be subdivided.

(3) Low Density Residential

The low density residential designation provides for single-family detached homes, secondary residential units, public and quasi-public uses, and similar and compatible uses. Residential densities shall be in the range of 4 to 6 units per gross acre.

(4) Medium Density Residential

The medium density residential designation provides for single-family and multi-family residential units, public and quasi-public uses, and similar and compatible uses. Residential densities shall be in the range of 6 to 10 units per gross acre.

(5) High Density Residential

The high density residential designation provides for single family and multi-family residential units, group quarters, public and quasi-public uses, and similar and compatible uses. Residential densities shall be in the range of 12 to 23 units per gross acre.

c. Commercial

(1) Neighborhood Commercial

The neighborhood commercial designation provides for neighborhood and locally-oriented retail and service uses, public and quasi-public uses, and similar and compatible uses. The FAR shall not exceed 0.33.

(2) General Commercial

The general commercial designation provides for a variety of commercial and office uses normally found in the central business district of a city. These include restaurants, retail, service, professional and administrative offices, hotels, multi-family residential units, public and quasi-public uses, and similar and compatible uses. The FAR for offices and commercial uses shall not exceed 2.00; residential densities shall be in the range of 12.0 to 23.0 units per gross acre. Residential uses in this designation are subject to discretionary

review and approval, and may be combined with non-residential uses on the same lot.

(3) Service Commercial

The service commercial designation provides commercial activities in which the function performed is of equal or greater importance than the product traded, or which, due to space requirements or the distinctive nature of their operation, are usually not located in general commercial zones. The designation also provides for public and quasi-public uses, and similar and compatible uses. The FAR shall not exceed 3.0.

d. Industrial

(1) Light Industrial Reserve

The light industrial reserve designation is applied to land within the SOI planned for development with industrial uses beyond the time frame of the General Plan (2012).

(2) Light Industrial

The light industrial designation provides for restricted, non-intensive manufacturing and storage activities that are found not to generate levels of noise, glare, vibration, odors, or other characteristics that would be a nuisance on any immediately surrounding properties and the general environment of the surrounding area and for quasi-public uses, and similar and compatible uses. The FAR shall not exceed 0.75.

(3) Heavy Industrial

The heavy industrial designation provides for a full range of manufacturing, processing, fabrication, and storage activities that are found not to generate levels of noise, glare, vibration, odors, or other characteristics that would be a nuisance that extends beyond the boundaries of the general industrial area in which the source industry is located. The FAR shall not exceed 0.75.

e. Public Facilities

The public facilities designation provides for publicly-owned facilities such as city hall, libraries, courthouses, and schools, and other public facility sites throughout the Firebaugh SOI. The FAR shall not exceed 0.4.

f. Open Space

(1) Open Space/Limited Development

The open space/limited development designation provides for the preservation of public and quasi-public uses of a permanent open space or non-intensive recreation nature and to limit development in areas subject to flooding, excessive erosion, or other man-made or natural hazards. The FAR shall not exceed 0.2.

(2) Open Space/Parks

The open space/parks designation provides for existing public parks. The FAR in open space/park areas designated shall not exceed 0.20.

(3) Agriculture

The agriculture designation provides for agricultural uses, industrial uses related directly to agriculture, related single-family homes, and similar and compatible uses. The minimum parcel size shall be 20 acres.

3. GENERAL PLAN AND ZONING CONSISTENCY

The zoning that is consistent with each land use classification is presented in the Zoning Consistency Matrix (Table 1). Standards for the development of each land use classification are in large measure embodied in the zoning that is consistent with each classification. The standards and definitions contained in this section, including the Zoning Consistency Matrix, are reflective of City policy for the purposes of interpreting the land use classification in this general plan.

4. CIRCULATION DIAGRAM

The major street system for the City of Firebaugh is shown on the attached Draft Land Use and Circulation Diagram. Definitions and standards for the street system are as follows:

(1) Alleys

The current development standards for Firebaugh subdivisions do not include alleys. Alleys in the older parts of the City have 20-foot rights-of-way.

(2) Local Streets

Local streets provide immediate access to properties, are likely to be discontinuous in alignment, and generally carry very light traffic volumes. Local streets have a minimum street right-of-way of 60 feet (local streets in the

TABLE 1

ZONING CONSISTENCY TABLE

General Plan Designation	Zone Districts																
	R-1	R-1-4.25	R-1-5	R-2-A	R-2	R-3-A	R-3	T-P	C-1	C-2	C-3	M-1	M-2	U-R	O	P	G
Urban Reserve														*			
Rural Residential														*		*	
Low Density Residential	*	**	**											*		*	
Medium Density Residential				*	*									*		*	
High Density Residential						*	*	*						*			
Neighborhood Commercial									*					*			
General Commercial										*	**			*			
Service Commercial										**	*			*			
Limited Industrial												*		*			
General Industrial													*	*			
Public Facilities														*			*
Open Space														*	*		
Agriculture														*			

* = consistent
** = may be consistent, see the following policies:

R-1-4.25, Land Use Policy 2e
R-1-5, Land Use Policy 2d
C-2 and C-3, Land Use Policy 3c

original Firebaugh townsite have 80-foot rights-of-way). Those streets not identified as being in one of the other street classifications described below fall into this classification.

(3) Local Collector Streets

Local collector streets provide for internal traffic movement within an area and connect local streets to the arterial system. Local collector streets shall be two-lane streets and have a minimum right-of-way of 64 feet. Any uses on local collector streets should be designed to discourage vehicles from backing onto the streets.

(4) Collector Streets

Collector streets provide for internal traffic movement within an area and connect local streets to the arterial system. Collectors streets shall be four-lane streets and shall have a minimum right-of-way of 84 feet. Any uses on collector street should be designed to discourage vehicles from backing onto the streets.

(5) Arterial Streets

Arterial streets provide for through movement on a continuous route joining major traffic generators, other arterials, expressways, and freeways. In newly developing areas, arterial streets shall be four-lane streets constructed on rights-of-way of 84 feet (Highway 33 shall have a right-of-way of 110 feet). Access to abutting properties shall be controlled.

LAND USE GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To provide for a balanced land use pattern meeting the needs of the residents and economy of the City of Firebaugh

Policies

1a. The City shall seek to maintain its agricultural heritage, while increasing and diversifying its residential, commercial, and industrial base.

1b. The City shall promote growth that reinforces the central business district as the geographic and economic center of Firebaugh.

1c. The City shall protect land within its SOI that is designated for urban residential, commercial, or industrial development from inappropriate or premature development.

1d. The City shall ensure that new development pays its share in financing public facilities and services.

Goal 2: To provide adequate land in a range of residential densities to address the housing needs of all income groups projected to reside in Firebaugh

Policies

2a. The City shall designate most vacant land intended for future residential use within its SOI for low density residential development. It is the intent of the City, however, to provide for a variety of housing types and densities through the general plan amendment procedure. Higher density areas appropriate for apartments and mobile homes should be located convenient to public facilities and services, major streets, and/or shopping and working centers. It will be the policy of the City to base decisions related to land use densities on the following criteria:

- The City will consider amending the *Firebaugh General Plan* to designate land for medium density residential development when the land has access to at least one major street and it is adjacent to

land designated for medium or high density residential use or for commercial or park use.

- The City will consider amending the *Firebaugh General Plan* to designate land for high density residential use when the land is located at the intersection of two major streets or is adjacent to land designated for high or medium density residential, park, or neighborhood commercial use and has access to at least one major street.

2b. The City shall promote the development of affordable housing to meet the needs of low- and moderate-income households. Specific policies related to affordable housing are located in the City of Firebaugh's *1991 Housing Element*.

2c. The City shall seek to maintain the quality and integrity of its existing residential neighborhoods.

2d. Prior to zoning any property R-1-5, the Planning Commission and the City Council shall each make a finding that the proposed zoning is compatible with any existing residential development in the area surrounding the proposed site.

2e. The City shall not amend the *Firebaugh Zoning Ordinance* to apply the R-1-4.25 District to any additional land in the City.

Goal 3: To provide land and support for commercial development providing goods and services to Firebaugh residents

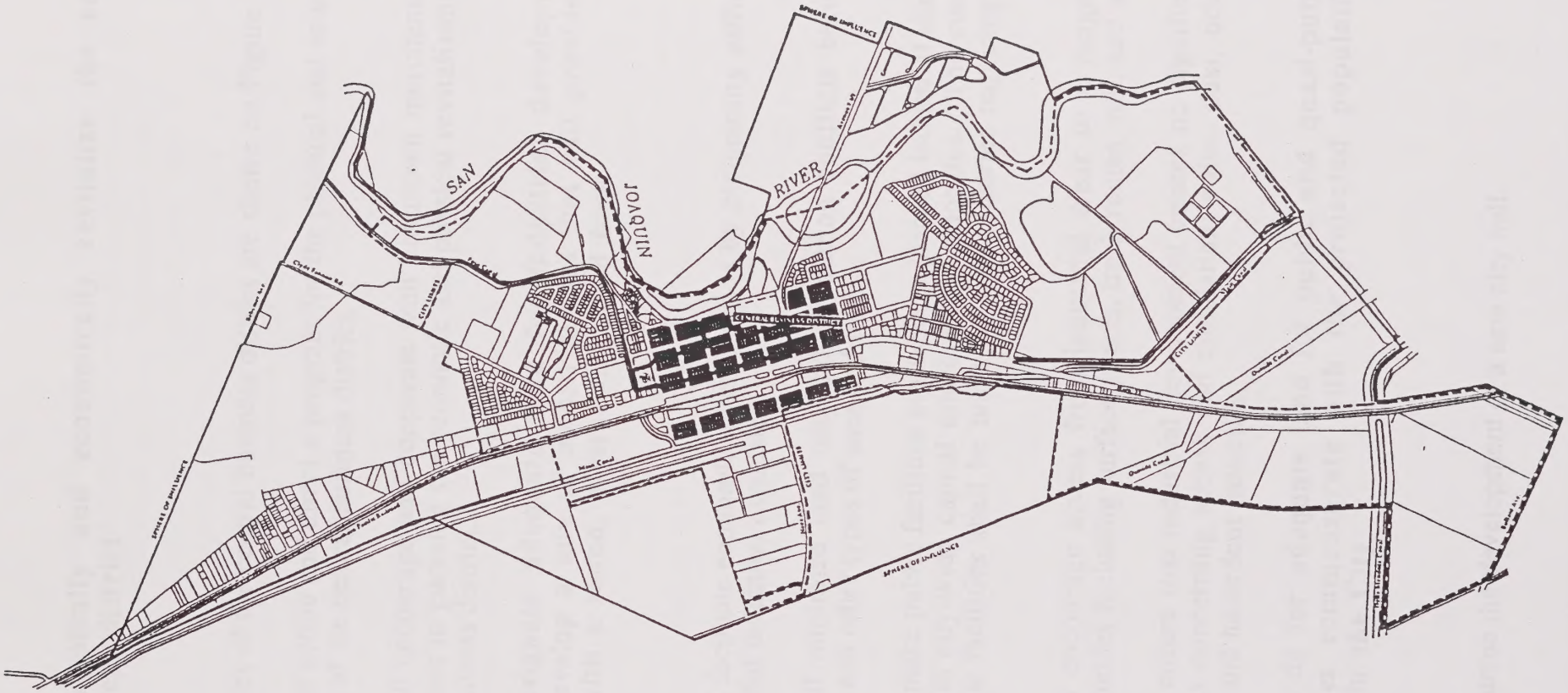
Policies

3a. The City shall encourage the improvement and enhancement of retail and office developments in the central business district and will encourage the development of service commercial development along Highway 33 and Nees Avenue.

3b. The City shall seek to provide for adequate on- and off-street parking for all users of commercial areas.

3c. When a project is proposed for property which is partially designated for general commercial and partially designated for service commercial use, the City may zone the entire site C-2 or C-3.

3d. The City shall encourage the development of physical, functional, and visual transitions between commercial areas and residential areas.



NOT TO SCALE

Central Business District

Figure 1

Goal 4: To physically and economically revitalize the central business district

Policies

4a. The boundaries of the central business district are shown on Figure 1.

4b. The City shall define and direct a program for the physical and economic revitalization of the central business district.

4c. The City shall encourage and cooperate with downtown merchants and property owners in pursuing the economic and physical revitalization of the central business district.

Goal 5: To designate adequate land for industrial development and develop a mix of industrial uses that will provide the City with a sound, diverse industrial base

Policies

5a. The City shall facilitate economic diversification by designating sufficient land for potential industrial expansion.

5b. The City shall minimize land use and circulation conflicts between industrial uses and other types of uses and traffic.

5c. The City shall make public facilities available to planned industrial sites in accordance with city-wide capital improvement priorities. The cost of extending public facilities shall be borne by the industries requiring the facilities.

5d. The City shall encourage access from industrial areas to a range of transportation modes including surface streets, truck routes, rail, and air.

5e. The City shall ensure that industrial development creates no significant off-site impacts concerning access and circulation, noise, dust, odors, visual features, and hazardous materials.

Goal 6: To provide for adequate land for public and quasi-public land uses commensurate with the projected population growth in the City

Policies

6a. The City shall pursue the development of a new city hall.

6b. The City shall consider the locations of quasi-public facilities such as churches, private schools, and utilities to be consistent with the general plan if they are located in zone districts which are consistent with the underlying general plan designation.

6c. The City shall designate a general location for a school site on the general plan map. Projects proposed in the area in which the general school site is located, shall be reviewed by the Firebaugh-Las Deltas Unified School District to determine if a school site is required as part of the project.

Goal 7: To manage the location, timing, and extent of annexation and urban growth within the SOI in a manner that will ensure that the growth can be provided with adequate urban services while not reducing the level or increasing the cost of such services to existing development within the City

Policies

7a. Limited Industrial and Residential Reserve Land

The City shall maintain zoning on the land that permits limited agricultural uses and prohibits uses that are not consistent with the intended future urban use of the land. The zoning that is consistent with urban reserve uses is the Urban Reserve Zone.

The City shall consider applications for development of land within a designated urban reserve, including zoning and subdivision applications, to be consistent with the General Plan when the proposed development meets the criteria specified below: (Where extensions, additions, or improvements to water, sewer, drainage, street, and park and recreation facilities and systems are required in order to conform with any of the criteria, the City will require said extensions, additions, or improvements only in accordance with applicable federal, state, and local regulations.)

- The property is annexed to the City.
- The proposed type of development is consistent with the General Plan Map land use classification for the land on which the development is proposed or that an application for the necessary amendment is being processed simultaneously.
- The proposed development can be served by the City water system without requiring system extensions beyond those which the developer will provide.

- The proposed development can be served by the City's wastewater collection and treatment system without requiring system extensions beyond those which the developer will provide.

- The proposed development can be served by a drainage system approved by the City without requiring extensions of the City's drainage system beyond those which the developer will provide.

- The proposed development can be provided fire protection in accordance with the standards of the City of Firebaugh Fire Department.

- The proposed development can be provided law enforcement services in accordance with the standards of the City of Firebaugh Police Department.

- The proposed development can be served by the major street system without substantially altering existing traffic patterns or overloading the street system and without requiring improvements to the street system beyond those which the developer will provide.

- The proposed development can be provided adequate park and recreation facilities without requiring additions to existing facilities beyond those which the developer will provide.

- The local school district can accommodate any children expected to inhabit a proposed development in accordance with established classroom facility standards of the district.

7b. Unincorporated Land Designated For Urban Development (except for Del Rio)

The City will request that Fresno County take the following actions:

- Maintain limited agricultural zoning on all land designated for future urban uses within the planning area. The operational characteristics of uses permitted within the limited agricultural zone should be such that they will not adversely affect the existing or future use of the land for urban purposes.

- Maintain zoning that prohibits the division of the land into parcels of less than 20 acres in area.

- Refer all proposals for urban development to the City for consideration.

Where a proposal or application submitted to Fresno County for development of unincorporated land does not meet the criteria identified in Policy 7a, but is within an area designated for future urban growth on the General Plan, the City will advise Fresno County that the proposed development is premature, that it is not consistent with the General Plan, and will request that the County not approve the application.

7c. Del Rio

The City of Firebaugh will consider the annexation of Del Rio when the following conditions are met:

- Public water and sewer systems have been installed.
- Appropriate drainage facilities have been developed for the area.
- All existing streets have been improved to standards acceptable to the City.

IMPLEMENTATION MEASURES

1. The City will review, and if necessary, amend its Zoning Ordinance to bring it into consistency with the *Firebaugh General Plan.*

   Responsibility: City Council; Administrative and Planning Staff
   Time Frame: FY 1992-1993

2. The City will establish a revitalization program for the central business district. The program components will address the establishment of a Central Business District Committee, building improvements, landscaping, lighting, street furniture, parking, circulation, financing, downtown promotion, and land use controls. The components are further described in Appendix 1 (Central Business District Revitalization Committee).

   Responsibility: Administrative Staff; City Council
   Time Frame: FY 1992-1993

3. When the City has the financial capability, it will consider the adoption of architectural and design standards for the central business area. When such standards are developed, all building and development activity will be required to conform to them.

   Responsibility: Administrative Staff; Finance Department; City Council
   Time Frame: As funds become available

4. The City will prepare an economic development plan to identify strategies for attracting new commercial development and industry to Firebaugh

Responsibility: Administrative Staff; City Council
Time Frame: FY 1992-1993

5. As funding permits, the City will undertake a study to determine its facility needs, including a new City Hall, and will look for alternative methods of providing additional housing space for its staff.

Responsibility: Administrative Staff; City Council
Time Frame: FY 1993-1994

6. The City will not approve applications for subdivisions, parcel maps, conditional use permits, building permits, or other grants of approval for urban growth unless all of the criteria listed in Policy 7a are met.

Responsibility: Planning Commission; City Council
Time Frame: Dependent upon applications for development

7. The City will create a "one-stop" development procedure to facilitate development applications.

Responsibility: Administrative, Planning, and Engineering Staff
Time Frame: FY 1992-1993

8. The City will assist commercial developers who wish to locate in Firebaugh to find appropriate sites.

Responsibility: Administrative Staff
Time Frame: Ongoing

9. The City will regularly review and update its fee schedule to ensure that the fees cover the costs of the services which are provided.

Responsibility: Planning Commission; City Council; Administrative, Planning, and Engineering Staff
Time Frame: FY 1992-1993 and every two years thereafter

10. The City shall comply with LAFCO policies related to urban services and prime agricultural land.

Responsibility: City Council/Administrative and Planning Staff
Time Frame: Dependent upon applications for annexation.

CIRCULATION GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To develop a circulation system which provides for the safe and efficient movement of people and goods throughout the City and its Sphere of Influence

Policies

1a. The City shall maintain and develop streets in a manner that is supportive of the Land Use Goals and Policies of this plan.

1b. The City's major street system shall consist of arterial, major collector, and collector streets. The standards for these streets are described in Section B, 4.

1c. The City shall control access to streets and highways in a manner which is supportive of their functions.

1d. The City shall require that streets be improved to their design standards with development.

1e. The City shall regularly review and update its Capital Improvements Plan for streets.

1f. The City shall meet its statutory requirements related to the Fresno County Congestion Management Plan.

1g. The City will refer to the County of Fresno, for review and approval, street improvement plans for all new and/or reconstructed roads adjacent to County roads or properties under the County's jurisdiction.

Goal 2: To ensure the provision of adequate on- and off-site parking

Policies

2a. The City shall require that adequate off-street parking be provided by all new development or the expansion of existing development.

2b. The City shall investigate the availability of vacant parcels within the central business district for parking lots.

2c. The City shall consider the development of public parking lots in the central business district through the Firebaugh Redevelopment Agency.

Goal 3: To provide for adequate and safe movement of elderly, low-income, and handicapped citizens throughout the City

Policy

3a. The City shall cooperate in and encourage the development of inter-city and intra-city transit systems, with special emphasis toward serving the needs of senior citizens, the physically handicapped, and low-income residents.

Goal 4: To protect the integrity of the Firebaugh Municipal Airport

Policy

4a. The City shall require that all development within the review area boundaries of the Fresno County Airport Land Use Commission's *Airport Land Use Policy Plan* be consistent with the policies in the plan.

Goal 5: To consider air quality and noise impacts along with traffic flow when making decisions about improvements to existing roadways or construction of new roadways

Policy

5a. To the extent feasible, the City shall provide for separation of residential and other noise-sensitive land uses from major roadways to reduce noise and air pollution impacts.

IMPLEMENTATION MEASURES

1. The City will coordinate street planning with Fresno and Madera Counties and Caltrans to insure the orderly development of the required street network.

   Responsibility: Administrative and Planning Staff
   Time Frame: Ongoing

2. The City will require the construction of full-width streets as a condition of subdivision approval.

Responsibility: Administrative and Planning Staff; City Council
Time Frame: FY 1992-1993

3. The City will require that all new development meet arterial, major collector, collector, or local road design standards for right-of-way design and construction.

Responsibility: Administrative and Planning Staff
Time Frame: As new development occurs

4. The City will require that traffic-control devices on streets be installed by developers in accordance with the planned function of the streets.

Responsibility: Administrative and Planning Staff
Time Frame: As new development occurs

5. The City will require new subdivisions to be designed to minimize the number of lots fronting on arterial, major collector, and collector streets.

Responsibility: Planning and Public Works Departments
Time Frame: As new development occurs

6. The City will consider the establishment of a circulation improvements development fee program to pay for street improvements (to include signal lights and intersection improvements) necessitated by future development.

Responsibility: City Council; Administrative Staff
Time Frame: FY 1992-1993

7. For development activity other than subdivisions, the City will control access to arterial, major collector, and collector streets through the site plan process and through any other appropriate procedures and ordinances available to the City.

Responsibility: Administrative and Planning Staff; Planning Commission
Time Frame: Ongoing

8. The City will utilize the tentative map review and site plan review processes to ensure that new development is designed to minimize the flow of traffic through existing residential neighborhoods. Where a project will result in an increase in traffic through an existing neighborhood, the City will require that traffic control measures such as stop signs and speed bumps be installed at appropriate locations as part of the project.

Responsibility: City Council; Planning Department; Engineering Department
Time Frame: As necessary

9. The City will maintain and enforce the truck routes within the City. The truck route through the central business district will be reviewed, and, if necessary, revised to minimize the flow of truck traffic through the central business district.

Responsibility: Administrative and Planning Staff; Police Department.
Time Frame: Ongoing

10. The City will refer all development applications for projects in the City to Caltrans for review.

Responsibility: Administrative and Planning Staff
Time Frame: As new development occurs

11. The City will enforce its Zoning Ordinance standards related to parking to ensure that all new commercial and industrial development include adequate parking facilities for its employees and trucks.

Responsibility: City Council; Administrative and Planning Staff
Time Frame: FY 1992-1993

12. Where two non-connected segments of a roadway have been dedicated and or constructed, the City will plan line the intervening segment of the road.

Responsibility: City Council; Public Works Department
Time Frame: As necessary

13. The City will improve existing streets in accordance with its adopted *Five-Year Capital Improvement Program.* The City will regularly update its *Five-Year Capital Improvement Program.*

Responsibility: City Council; Administrative Staff; Public Works Department
Time Frame: Ongoing, FY 1993-1994 and every two years thereafter

14. The City will not approve development proposals which are not in conformance with the Fresno County Airport Land Use Commission's *Airport Land Use Policy Plan.*

Responsibility: Planning Department; Planning Commission; City Council
Time Frame: Ongoing

15. No development projects in the City will be approved that would result in the intersections of Saipan Street, 12th Street, 13th Street, or Clyde Fannon Drive operating below LOS C.

Responsibility: Administrative and Planning Staff
Time Frame: As necessary

16. The City will comply with the requirements of the Land Use Analysis Program for the *Fresno County Congestion Management Plan* when the program is prepared and adopted by the Fresno County Congestion Management Agency.

Responsibility: Administrative and Planning Staff
Time Frame: As necessary

17. Prior to development in any area designated as residential reserve, a traffic study shall be prepared. If the traffic study reveals that the development of the project would result in one or more streets impacted by the project operating at less than LOS C, said project shall not be approved unless appropriate mitigation measures can be identified and implemented that would result in an LOS C or better.

Responsibility: Administrative and Planning Staff
Time Frame: As necessary

PUBLIC FACILITIES AND SERVICES GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To ensure an adequate supply of water for the existing and projected population of the City of Firebaugh

Policies

1a. Groundwater shall continue to be the source of the City's water supply.

1b. The City shall expand and improve its water system in accordance with its adopted *Five-Year Capital Improvement Program.*

1c. The City shall coordinate with other agencies having an interest or responsibility for water resources in the Firebaugh area.

1d. The City shall encourage and support the conservation of water by all water users connected to the City's water system.

1e. The City shall ensure the provision of adequate fire flows in new development.

1f. The City shall take appropriate measures to ensure that new development will pay its share of the costs for water system improvements.

Goal 2: To provide adequate wastewater collection, treatment, and disposal facilities for the existing and projected population of the City of Firebaugh

Policies

2a. The City's wastewater treatment facilities shall be operated in compliance with the waste discharge requirements established by the California Regional Water Quality Control Board. The City will not approve any projects which would result in the violation of the discharge permit requirements.

2b. The City's wastewater collection system shall be expanded and improved in accordance with the adopted *Five-Year Capital Improvement Program.*

2c. All new urban development shall be connected to the City's wastewater collection, treatment, and disposal system.

2d. The City shall take appropriate measures to ensure that new development will pay its share of the costs for the City's wastewater collection, treatment, and disposal system.

2e. The City shall cooperate with any agencies or private companies that wish to develop programs for the reclamation and reuse of treated sewer effluent for irrigation purposes.

Goal 3: To dispose of storm water runoff from existing and future development in a manner which will avoid flooding and property damage

Policies

3a. The City shall prepare a storm water drainage master plan and all new development shall comply with its standards and requirements.

3b. Storm water runoff from all new development shall be disposed of in detention ponds. The development of ponds which drain several project sites shall be preferred over smaller, single-site ponds. The ponds shall be dedicated to the City, but assessment districts which encompass the areas drained into the ponds shall be created to cover the costs of their operation and maintenance.

3c. Drainage system discharges shall comply with applicable state and federal pollutant discharge requirements.

3d. The City shall take appropriate measures to ensure that new development will pay its share of the costs for the City's storm water drainage system.

Goal 4: To reduce the amount of solid waste which must be collected and disposed of from the existing and projected population

Policies

4a. The City shall strive to reduce its solid waste generation rate by 25 percent by 1995 and 50 percent by the year 2000.

4b. The City shall continue to provide a fall and spring "cleanup" day at no charge to its residents.

4c. The City shall encourage its citizens to participate with Firebaugh Disposal Services in its green waste recycling program.

Goal 5: To maintain and improve the level of fire protection services in the City

Policies

5a. The City shall require that all new development be designed to provide proper access for fire trucks and equipment.

5b. The City shall continue to cooperate with adjacent fire districts in the provision of fire protection services through mutual aid agreements.

Goal 6: To maintain and improve the level of police protection services in the City

Policies

6a. The City shall promote the inclusion of security features in all new development.

6b. The City shall discourage "leap-frog" urban development due to the difficulties and expenses involved in providing adequate law enforcement and protection services to isolated development.

6c. The City shall encourage the formation of neighborhood watch groups.

Goal 7: To protect existing school sites from incompatible development and to provide appropriate locations for new school facilities in the City

Policies

7a. The City shall coordinate with the Firebaugh-Las Deltas Unified School District in determining locations for new schools. The school location shown on the General Plan map is schematic only. The exact location of the school shall be determined when the school is required.

7b. The City will coordinate with the District in reviewing and considering impacts of proposed development on school facilities.

IMPLEMENTATION MEASURES

1. The City will periodically review and update its *Five-Year Capital Improvement Program.*

Responsibility: City Council; Administrative Staff; City Engineer; Public Works Department; Finance Department

Time Frame: Ongoing

2. The City will improve its water supply and distribution system and wastewater collection and treatment system in accordance with the priorities and time lines established in the Five-Year Capital Improvement Program.

Responsibility: City Council; Administrative Staff; City Engineer; Director of Public Works

Time Frame: Ongoing

3. The City will maintain its well farm on the east side of the San Joaquin River.

Responsibility: City Council; Administrative Staff; City Engineer; Director of Public Works

Time Frame: Ongoing

4 The City will continue its water-mixing program or shall make system or well modifications to ensure that the water standards are maintained.

Responsibility: City Council; Administrative Staff; City Engineer; Director of Public Works

Time Frame: Ongoing

5. The City will continue its water-filtering program to remove manganese and iron from the water being delivered to its residents. The City will add additional filtering tanks to the system as necessary to serve a growing population. The first additional filtering tanks will be added in 1992.

Responsibility: City Council; Administrative Staff; City Engineer; Director of Public Works

Time Frame: Ongoing

6. The City will enforce the water conservation program adopted by the City Council in 1991. The water conservation program, among other things, requires that all new residential development install and use water meters.

Responsibility: City Council; Administrative Staff; City Engineer; Director of Public Works

Time Frame: Ongoing

7. The City will prepare and adopt a storm water drainage master plan consistent with the land use patterns and densities/intensities set forth in the General Plan.

Responsibility: City Council; City Engineer; Director of Public Works
Time Frame: FY 1992-1993

8. If it is necessary to meet its legal obligations to reduce solid waste by 25 percent by the year 1995 and by 50 percent by the year 2000, the City will develop a recycling program in conjunction with its contracted solid waste removal company.

Responsibility: City Council
Time Frame: As necessary

9. The City will designate a floating school site in the area west of Clyde Fannon Road on the General Plan. When the Firebaugh-Las Deltas Unified School District selects a specific site in that area, the Planning Commission will make a finding of consistency with the General Plan, will remove the floating designation, and will show the exact site on the General Plan.

Responsibility: Planning Commission
Time Frame: As needed

10. The City will refer all development applications to the Firebaugh-Las Deltas Unified School District for review and comment to ensure that appropriate mitigation measures related to school facilities are incorporated into development plans.

Responsibility: Administrative and Planning Staff; Planning Department
Time Frame: As needed

11. The City will refer all subdivision maps, site plans, and any other grant of approval for development activity to the Firebaugh Police and Fire Departments for review to ensure that appropriate police and fire protection measures are incorporated into development plans.

Responsibility: Administrative and Planning Staff; Planning Department; Fire Department; Police Department
Time Frame: As needed

RECREATIONAL AND CULTURAL RESOURCES GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To provide adequate recreational lands and facilities for all residents in the City of Firebaugh

Policies

1a. The City shall establish a standard of 3.5 acres of developed parkland per 1,000 residents.

1b. The City shall place emphasis upon the development and maintenance of existing parks rather than the acquisition of new parkland.

1c. The City shall pursue all available and appropriate County, state, and federal funding for the development of park improvements and recreational programs.

1d. The City shall pursue joint use of school facilities as a high priority for park and recreational activities, especially for after-school activities.

1e. The City shall emphasize the use of drought-tolerant and drought-resistant landscaping in the development or redevelopment of City parks.

1f. The City shall consider the needs of all residents, including those with special needs, such as the physically disabled and the elderly, in planning recreational programs and activities.

Goal 2: To identify and preserve archaeological and historic resources within the City of Firebaugh

Policies

2a. The City shall support the efforts of property owners to preserve and renovate historic and architecturally significant structures. Where such buildings cannot be preserved intact, the City shall encourage property owners to preserve the building facades.

2b. Identified areas of archaeological or historical significance shall be preserved, preferably in public ownership.

2c. Buildings or structures in the the City that have visual merit and historical value shall be protected.

IMPLEMENTATION MEASURES

1. The City will continue to apply for park and recreation funds from all available sources for the improvement of its existing parks.

   Responsibility: Firebaugh City Council
   Time Frame: Ongoing

2. The City will develop an agreement with the Firebaugh Las-Deltas Unified School District regarding the use of school facilities for certain recreation activities.

   Responsibility: Firebaugh City Council
   Time Frame: In process

3. If any cultural resources are discovered during the process of development, the City will require that work stop and that a qualified archaeologist and, if appropriate, the Native American Heritage Commission, be contacted immediately so that mitigative actions can be taken. The City will not permit work to be resumed until any required mitigation measures have been completed.

   Responsibility: All City Staff; City Council
   Time Frame: As necessary

4. The City will maintain the remnants of the Firebaugh Ferry, in the Andrew Firebaugh Park, and the cemetery adjacent to Highway 33 and the Main Canal, in the southern portion of the City, which have been identified as being of historical interest.

   Responsibility: Firebaugh City Council
   Time Frame: Ongoing

5. The City will seek to identify funding mechanisms to support programs to preserve, restore, and enhance unique historic sites.

   Responsibility: Firebaugh City Council
   Time Frame: Ongoing

6. The City shall require a surface investigation for cultural resources to be conducted by a qualified archaeologist as part of the environmental assessment process for any proposed urban development project within the future growth areas. Any resources discovered should be properly investigated and appropriate protective measures should be taken as recommended by the archaeologist.

Responsibility: Administrative and Planning Staff
Time Frame: Development Applications

7. The City shall require that if cultural resources are discovered during construction or related activities, all work will be halted within 100 feet of the site and a qualified archaeologist (or the State Office of Historic Preservation) and the City of Firebaugh will be informed. All contractors and subcontractors will be informed in writing of this possibility. The find will be properly investigated and appropriate protective measures will be taken, as recommended by the archaeologist or the State Office of Historic Preservation.

Responsibility: Administrative and Planning Staff
Time Frame: Development Applications

NATURAL RESOURCES GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To protect groundwater and surface water quality

Policies

1a. The City shall regularly monitor water quality in its wells for evidence of toxics and other contaminants.

1b. The City shall require storm water from all future development to be disposed of in detention basins.

1c. The City, through the California Environmental Quality Act (CEQA) process, shall review all new commercial and industrial development to determine their potential for contamination of groundwater and surface water in the Firebaugh SOI.

1d. Land use activities that use or store hazardous materials shall be regulated and monitored by the City in order to prevent the contamination of groundwater or surface water resources.

1e. The City shall enforce its adopted water conservation ordinance.

1f. The City shall continue to take all actions necessary to meet water quality discharge standards in the operation of its wastewater treatment plant.

Goal 2: To preserve, to the greatest extent possible, the productive agricultural land around Firebaugh and to minimize conflicts between agricultural and urban uses

Policies

2a. The City shall annex and permit the development of land only in accordance with Policies 7a through 7c set forth in Section C.

2b. The City shall encourage the continued farming of land designated for urban use within its SOI until development occurs.

2c. The City shall adopt a right-to-farm ordinance.

2d. The City shall support the cancellation of a Williamson Act Contract only if the cancellation of the contract is consistent with state law and development is consistent with the growth management policies set forth in Section C, Policy 7a.

2e. The City shall permit development to occur only on land which is adjacent to existing urban development. The City shall not approve "leap-frog" development.

Goal 3: To preserve and enhance the riparian habitat and river channel of the San Joaquin River

Policies

3a. The City shall promote the conservation and protection of the riparian habitat along the San Joaquin River. The river channel area shall only be used for activities which are consistent with the sensitive environmental characteristics of the area. Any disturbance of levee vegetation should be minimized and mitigated consistent with flood control and reclamation district constraints.

3b. The City will regulate the location, density, and design of development within its SOI to minimize adverse impacts upon the habitat of the giant garter snake, Swainson's Hawk, valley elderberry long-horned beetle, and western (Californian) yellow-billed cuckoo, all listed as threatened species.

3c. Access to and use of the area encompassing the riparian habitat along the San Joaquin River (see Section VII of the *General Plan Background Document* for riparian habitat area) shall be designed to avoid and to preserve sensitive biological habitat.

Goal 4: To conserve the air resources within the Firebaugh SOI

Policies

4a. Proposed projects shall be reviewed for their potential to generate air pollution.

4b. The City shall cooperate with the State Air Resources Board and the San Joaquin Valley Unified Air Pollution Control District and other agencies in formulating and monitoring strategies and tactics to reduce air pollution emissions.

IMPLEMENTATION MEASURES

1. The City will continue to monitor groundwater quality through its on-going well monitoring program.

   Responsibility: Engineering Department; Public Works Department
   Time Frame: Ongoing

2. The City will evaluate the impacts of all new development on groundwater quality and quantity through the CEQA process and will not approve projects that have adverse impacts upon this resource which cannot be mitigated.

   Responsibility: Planning Department; City Council
   Time Frame: As necessary

3. The City will periodically review and update its adopted *Water Conservation Ordinance* to ensure that state-of-the-art water conservation measures are incorporated into the ordinance.

   Responsibility: Planning Department; City Council
   Time Frame: As necessary

4. The City will designate all land along the San Joaquin River within its SOI, except for the City's well farm, for open space use. The City's well farm will be designated for public facility use. Except for the City's water wells and related facilities, no development will be permitted at the well farm.

   Responsibility: Planning Department; City Council
   Time Frame: 1992

5. In order to protect farming activities within the SOI which are adjacent to existing and future residential development, the City will adopt a right-to-farm ordinance.

   Responsibility: Planning Department; City Council
   Time Frame: FY 1992-1993

6. The City will consider establishing a river cleanup program similar to that of the fall and spring neighborhood cleanup day.

   Responsibility: Administrative Staff; City Council
   Time Frame: FY 1992-1993

7. The City will review proposed new residential, commercial, and industrial development with the San Joaquin Valley Unified Air Pollution Control District (APCD) to determine if they are consistent with regional air quality plans, assumptions, and goals. Any mitigation measures recommended or required by the APCD will be required as conditions of approval for the projects.

Responsibility: Administrative Staff; City Council
Time Frame: As necessary

8. Biotic assessments shall be performed as part of the initial studies or EIRs required for all projects in the Project 2011 growth areas. Mitigation measures shall be required by the City, as appropriate, based on the finding of the assessments.

Responsibility: Administrative and Planning Staff
Time Frame: As needed

HEALTH AND SAFETY GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To prevent property damage in Firebaugh due to flooding

Policies

1a. The City shall take appropriate precautions to prevent localized flooding caused by high water in the San Joaquin River backflowing into the City's drainage system.

1b. The City shall impose appropriate conditions on grading projects performed during the rainy season to ensure that silt is not conveyed to storm drainage systems.

1c. In the event of dam failure, the City will follow the emergency plans which have been developed by the Fresno County Department of Health for safely evacuating people from areas subject to inundation from dam failure.

Goal 2: To reduce the potential danger to public health and safety from hazardous materials

Policies

2a. The City shall cooperate with any regional efforts to dispose of household hazardous materials in a safe manner.

2b. The City shall require any commercial or industrial development that utilizes hazardous materials to properly store and dispose of the materials in a manner which will prevent leakage, potential explosions, fires, or the escape of harmful gases.

2c. The City shall require any development that uses hazardous materials to meet all applicable County, state or federal regulations concerning their transportation, use, storage, or disposal.

Goal 3: To provide for the safety of the community in the event of a natural or man-made disaster

Policies

3a. The City shall maintain, and update as necessary, the *Firebaugh Emergency Plan.*

3b. The City shall maintain mutual aid agreements and communication links with surrounding jurisdictions for assistance during emergencies.

3c. The City shall enforce minimum road widths and clearances around structures to promote fire and safety protection and access.

3d. The City shall maintain an adequate water supply to meet requirements for fire fighting needs in accordance with the Insurance Services Office "Guide for Determination of Required Fire Flow".

Goal 4: To protect the citizens of the City of Firebaugh from the harmful and annoying effects of exposure to excessive noise

Policies

4a. New noise-sensitive land uses shall not be permitted in areas exposed to existing or projected future noise levels from transportation noise sources which exceed 65 dB L_{dn}/CNEL in outdoor activity areas and 45 dB L_{dn}/CNEL in interior spaces. Noise-sensitive land uses are defined in Subsection 7 of Section VIII of the *General Plan Background Document.*

4b. Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed 65 dB L_{dn}/CNEL within outdoor activity areas and 45 dB L_{dn}/CNEL in interior spaces of existing noise-sensitive land uses.

4c. New noise-sensitive land uses shall not be permitted where the noise level from existing stationary noise sources exceeds the noise level standards of Table VIII-2 of the *General Plan Background Document.*

4d. Noise from proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated so as not to exceed the noise level standards of Table VIII-2 of the *General Plan Background Document* on lands designated for noise-sensitive uses. This policy does not apply to noise levels associated with agricultural operations.

Goal 5: To prevent loss of life and damage to property due to structural or wildland fires

Policies

5a. The City shall require that all new development be designed with adequate access for firefighting apparatus.

5b. The City shall require new development to install water lines which will allow the minimum fire flow rates determined jointly by the City Engineer and Firebaugh Fire Department.

5c. The City shall improve fire flow rates in existing parts of the City in accordance with its adopted *Five-Year Capital Improvement Program.*

5d. The City shall maintain a regular fire inspection program for commercial and industrial buildings.

5e. The City shall endeavor to maintain at least an overall fire insurance rating of 6.

IMPLEMENTATION MEASURES

1. The City will continue its program of sand bagging storm drains during periods of high water in the San Joaquin River. This measure directs water which might otherwise result in localized flooding to appropriate drainage channels.

   Responsibility: Engineering Department; Public Works Department
   Time Frame: Ongoing

2. The City will prepare, adopt, and implement a Storm Drainage Master Plan.

   Responsibility: Administrative Staff; City Council; Engineering Department; Public Works Department
   Time Frame: FY 1991-1992; FY 1992-1993

3. The City will review and, if necessary, update its *Firebaugh Emergency Plan.* The review and update will encompass, among other things, the establishment of emergency evacuation routes and minimum road widths.

   Responsibility: City Council; Administrative Staff; Engineering Department; Police Department; Public Works Department
   Time Frame: As necessary

4. The City will require that hazardous waste materials be disposed of in accordance with the requirements of the *Fresno County Hazardous Waste Management Plan.*

Responsibility: Public Works Department
Time Frame: As necessary

5. When reviewing development applications and business license applications, the City will require applicants which use, store, or transport hazardous materials to provide copies of their *Hazardous Materials Business Plans.*

Responsibility: City Council; Administrative Staff; City Clerk; Planning Department; Public Works Department; Engineering Department
Time Frame: FY 1992-1993

6. The City will review new public and private development proposals to determine conformance with the City's noise-related policies.

Responsibility: City Council; Planning Department
Time Frame: Ongoing

7. Where development of a project may result in land uses being exposed to existing or projected future noise levels exceeding the levels specified by the City's noise policies, the City will require an acoustical analysis early in the CEQA review process so that noise mitigation may be included in the project design. For development not subject to CEQA, the requirements for an acoustical analysis shall be implemented prior to the issuance of a building permit. The requirements for the content of an acoustical analysis are located in Appendix 2.

Responsibility: City Council; Planning Department
Time Frame: Ongoing

8. The City will develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the development review and building permit processes.

Responsibility: City Council; Planning Department; Building Inspector
Time Frame: FY 1992-1993

9. The City will develop and employ procedures to monitor compliance with the City's noise-related policies after completion of projects where noise mitigation measures have been required.

Responsibility: City Council; Planning Department; Building Inspector
Time Frame: FY 1992-1993

10. The City will enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC), concerning interior noise exposure for multi-family housing, hotels, and motels.

Responsibility: Building Inspector
Time Frame: Ongoing

11. The City will request the California Highway Patrol, the Fresno County Sheriff, and the Firebaugh Police Department to actively enforce the California Vehicle Code sections related to adequate vehicle mufflers and modified exhaust systems.

Responsibility: Administrative Staff
Time Frame: FY 1991-1992

12. The City will periodically review and update the noise policies and implementation measures to ensure that noise exposure information and specific policies are consistent with changing conditions within the City and with noise control regulations or policies enacted after the adoption of this element.

Responsibility: City Council; Administrative and Planning Staff
Time Frame: As needed

13. The City, through conditions of approval of tentative tract and parcel maps and through site plan review, will require all new development to install water lines, fire hydrants, and any other appropriate fire fighting equipment determined to be necessary by the Firebaugh Fire Department and City Engineer to ensure proper fire protection.

Responsibility: City Council; Planning Department; Public Works Department; Fire Department
Time Frame: As needed

14. The City will improve its water system fire flow rates in accordance with the schedule set forth in its adopted *Five-Year Capital Improvement*

Program. The City will update its *Five-Year Capital Improvement Program* on a regular basis.

Responsibility: City Council; City Staff and Departments
Time Frame: As needed

15. The City will continue to maintain an efficient volunteer fire department and to ensure that there is adequate manpower and equipment to provide fire protection for existing and new development within the City.

Responsibility: City Council; Fire Department
Time Frame: Ongoing

16. The City will continue its weed-abatement program which is designed to limit the amount of vegetative combustible material within the City.

Responsibility: City Council; Public Works Department
Time Frame: Ongoing

17. The City will encourage the installation of private early warning and fire suppression systems.

Responsibility: City Council; Administrative Staff
Time Frame: Ongoing

18. The City will continue its mutual aid agreements with other fire fighting agencies in the area.

Responsibility: City Council; Fire Department
Time Frame: Ongoing

19. The City shall review and recalculate the 65 and 60 dB L_{dn} noise contours for major noise generators on a regular basis.

Responsibility: Administrative and Planning Staff
Time Frame: Dependent upon changes in noise-generating activities within the major noise generators

20. The City shall require, in cooperation with other agencies, the proper storage and disposal of hazardous materials to prevent leakage, potential explosions, fires, or the escape of hazardous gasses.

Responsibility: Administrative and Planning Staff
Time Frame: Ongoing

21. The City shall cooperate with the County in the identification of hazardous materials users (both large-and small-scale users) and in the development of an inspection process and hazardous materials management plan.

Responsibility: Fresno County and Administrative and Planning Staff
Time Frame: Dependent upon Fresno County

22. The City shall review land use policies to maintain compatibility between hazardous materials users and surrounding land uses to insure public safety.

Responsibility: Administrative and Planning Staff
Time Frame: Ongoing

23. The City shall maintain an updated list of sites within Firebaugh contaminated by hazardous materials

Responsibility: Administrative and Planning Staff
Time Frame: Ongoing

24. The City shall notify the Fresno County Health Department and/or the State Department of Health when a development proposal requiring a discretionary permit is proposed on an identified contaminated site.

Responsibility: Administrative and Planning Staff
Time Frame: Ongoing

25. The City shall amend its zoning ordinance to require a use permit for businesses and industries that generate hazardous waste. The use permit will require the hazardous waste generator to implement a hazardous waste reduction plan.

Responsibility: Administrative and Planning Staff
Time Frame: 1993

26. The City shall develop, in cooperation with Fresno County, a household hazardous waste collection and disposal system.

Responsibility: Administrative and Planning Staff
Time Frame: Dependent upon Fresno County.

CITY DESIGN, STRUCTURE, AND AESTHETICS GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To enhance the existing character of neighborhoods in Firebaugh

Policies

1a. The City shall encourage the planting and maintenance of drought-resistant trees and other drought-resistant landscaping in existing and new neighborhoods.

1b. The City shall review development plans to ensure that new development will be compatible with existing adjacent neighborhoods and that the integrity of existing residential neighborhoods will not be compromised.

1c. As the City grows, the City shall review traffic flow throughout the City, and, if necessary, take appropriate measures to ensure that increased traffic resulting from the growth does not adversely impact existing neighborhoods.

1d. The City shall encourage the removal of litter and trash from City streets, alleys, and private property.

1e. The City shall require vacant lots to be kept clean of weeds, trash, and litter.

Goal 2: To enhance the appearance and quality of the central business district

Policies

The policies related to improving the appearance and quality of the central business district are located in Section C, Policies 4a through 4c.

Goal 3: To protect the aesthetic qualities of the San Joaquin River

Policies

3a. The City shall implement the policies and implementation measures set for in Section C , Land Use, and Section G, Natural Resources, which call for the river channel and adjacent riparian habitat to be designated for open space and for periodic clean ups of the river bottom.

3b. The City will prohibit the use of off-road vehicles along the San Joaquin River bottom.

Goal 4: To develop aesthetically appealing entrances to the City of Firebaugh

Policy

4a. The City shall encourage local civic groups to participate in the development of signs and landscaping at locations on Highway 33, Nees Avenue, and Fresno-Madera Avenue to create aesthetically appealing entrances to Firebaugh.

IMPLEMENTATION MEASURES

1. Through the tentative map and site plan review procedures, the City will require the planting of street trees and other landscaping with all new residential development. Landscaping may also be required for new commercial and industrial development.

   Responsibility: City Council; Planning Department
   Time Frame: Ongoing

2. The City will not approve general plan amendments and changes of zone which would permit multiple family development to occur in existing predominantly single family residential neighborhoods.

   Responsibility: City Council; Planning Department
   Time Frame: As necessary

3. The City will continue its fall and spring clean up day program which removes litter and trash from both streets and private lots.

   Responsibility: City Council; Public Works Department; Finance Department
   Time Frame: Ongoing

4. The City will consider the development of a "City Entrance Program" which would focus on creating and maintaining attractive entrances to the City. The program will encourage the participation of all City residents through outreaches to civic groups, schools, and churches.

Responsibility: City Council; Administrative Staff
Time Frame: Ongoing

See also Implementation Measure 3, Land Use Goals, Policies, and Implementation Measures (for central business committee and aid to developers seeking sites).

ADMINISTRATION AND IMPLEMENTATION GOALS, POLICIES, AND IMPLEMENTATION MEASURES

GOALS AND POLICIES

Goal 1: To provide for the ongoing administration and implementation of the General Plan

Policies

1a. The City will periodically review and update its General Plan to reflect current conditions and state law.

1b. The City shall amend the General Plan no oftener than four times a year. Each amendment to the General Plan, however, may encompass multiple applications.

1c. Amendments to the *Firebaugh General Plan* shall only be initiated by the Firebaugh Planning Commission or Firebaugh City Council.

1d. The City shall periodically review and update its *Five-Year Capital Improvement Program.* Any modifications and updating of the *Five-Year Capital Improvement Program* shall be consistent with the General Plan.

1e. The City shall periodically review and update its *Zoning* and *Subdivision Ordinances* to ensure consistency with the General Plan.

IMPLEMENTATION MEASURES

1. The City Council or the Firebaugh Planning Commission will review General Plan amendment applications received by the City and will initiate said amendments only if they are consistent with the policies and implementation measures of the General Plan.

   Responsibility: Planning Department; City Council; Planning Commission
   Time Frame: As necessary

2. The City will review and update its *Five-Year Capital Improvement Program* on a biannual basis.

   Responsibility: City Council; Administrative Staff; Department Heads

Time Frame: 1994 and every two years thereafter

3. The City will review and amend its *Subdivision* and *Zoning Ordinances*, as necessary, to maintain consistency with the General Plan.

   Responsibility: City Council; Administrative Staff; Planning Department
   Time Frame: As Necessary

4. If a question of interpretation of the General Plan arises, the City Planning Department will prepare a written interpretation for review with the Planning Commission and City Council. The City Council shall have the final determination regarding matters of interpretation.

   Responsibility: Planning Department; City Council, Planning Commission
   Time Frame: As Necessary

5. The City will review the General Plan every five years and will, if necessary, amend the General Plan to reflect current conditions and state law.

   Responsibility: Planning Department; City Council
   Time Frame: As Necessary

APPENDIX 1

CENTRAL BUSINESS DISTRICT REVITALIZATION COMMITTEE

The City will establish a central business district revitalization program. The City will consider including and expanding upon the following components in developing the revitalization program. The program will address the following:

(a) Formation of a Central Business District Improvement Committee to direct the development and implementation of the central business district revitalization program. The Committee will include central business district merchants and property owners, interested citizens, members of the Chamber of Commerce, and City officials (City Council and Planning Commission members and staff).

(b) Building improvement measures include the following:

(1) The City Manager shall coordinate building improvement plans with project applicants. The City Manager and staff will recommend to project applicants that the design, materials, color, and other architectural features or proposed modifications or improvements of buildings and structures, including signs, be appropriate for the central business district.

(2) City staff and the Central Business District Improvement Committee will encourage and cooperate with central business district merchants and property owners in the renovation, rehabilitation, and redesign of buildings in the central business district.

(3) City staff and the Central Business District Improvement Committee will encourage the removal of obsolete buildings that do not meet applicable building codes and which cannot be economically rehabilitated.

(c) Landscaping improvement measures include the following:

(1) Planter areas in the central business district shall be developed, landscaped, and maintained.

(2) Owners of vacant property in the central business district shall be required to maintain them in a neat and orderly manner. Property owners shall be encouraged to provide landscaping on vacant lots.

(3) Landscaping standards shall be developed by City staff and adopted by the City. Any new parking lots in the central business district shall be required to meet the standards. Any existing parking lot which is being renovated or reconstructed shall be landscaped in accordance with these standards.

(d) Lighting and street furniture improvements include the following:

(1) Adequate street lighting shall be maintained by the City to ensure the safety of shoppers and security of businesses in the central business district.

(2) Street furniture within the central business district including, but not limited to, street signs, waste disposal containers, benches, etc., shall be improved and maintained as a joint effort between the City and the central business district proprietors. The design of street furniture should be harmonious and contribute to a positive central business district image.

(e) Parking measures include the following:

(1) The maximum number of on-street parking spaces that is commensurate with traffic safety and the design of existing streets shall be maintained.

(2) Existing public off-street parking shall be maintained.

(3) Landscaping shall be required in any parking lot developed in the central business district.

(f) Circulation measures include the following:

(1) Existing streets shall be maintained.

(2) The control of truck use on central business district streets shall be considered by the City.

(g) Financing measures include the following:

(1) Property owners and businesses shall be encouraged to invest in building and business improvements within the central business district.

(2) State and federal funding assistance that may be available for central business district rehabilitation shall be identified and, to the extent feasible, pursued.

(3) The use of the redevelopment process for central business district revitalization shall be considered.

(h) Land use control measures include the following:

(1) The "C-2" district shall be reviewed and revised as necessary to ensure that permitted and conditional land uses support the desirability of the central business district for shopping.

(2) Regulations governing the number, location, and design of signs and outdoor advertising structures in the "C-2" district shall be reviewed and revised as necessary.

APPENDIX 2

REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS

An acoustical analysis prepared pursuant to the Noise Element shall:

A. Be the financial responsibility of the applicant.

B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions. Where actual field measurements cannot be conducted, all sources of information used for calculation purposes shall be fully described. When the use being studied is a commercial use, all noise sources related to the service and maintenance of the facility shall be considered, including parking lot and landscape maintenance, refuse collection and truck loading/unloading activities.

D. Estimate existing and projected (20 years) noise levels in terms of the descriptors used in Tables 2 and 3, and compare those levels to the adopted policies of the Noise Element. Projected future noise levels shall take into account noise from planned streets, highways and road connections.

E. Recommend appropriate mitigation to achieve compliance with the adopted policies of the Noise Element, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.

F. Estimate noise exposure after the prescribed mitigation measures have been implemented.

G. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

LAND USE

1. INTRODUCTION

The most significant element of a general plan is generally considered to be the Land Use Element. This element sets forth land use standards and policies for land use and generally guides the development of the city. This background section sets forth the existing land use conditions which will form the backbone of all future land use planning in the city. The local, regional, state, and national plans and policies which could affect land use planning in Firebaugh are also identified and briefly described.

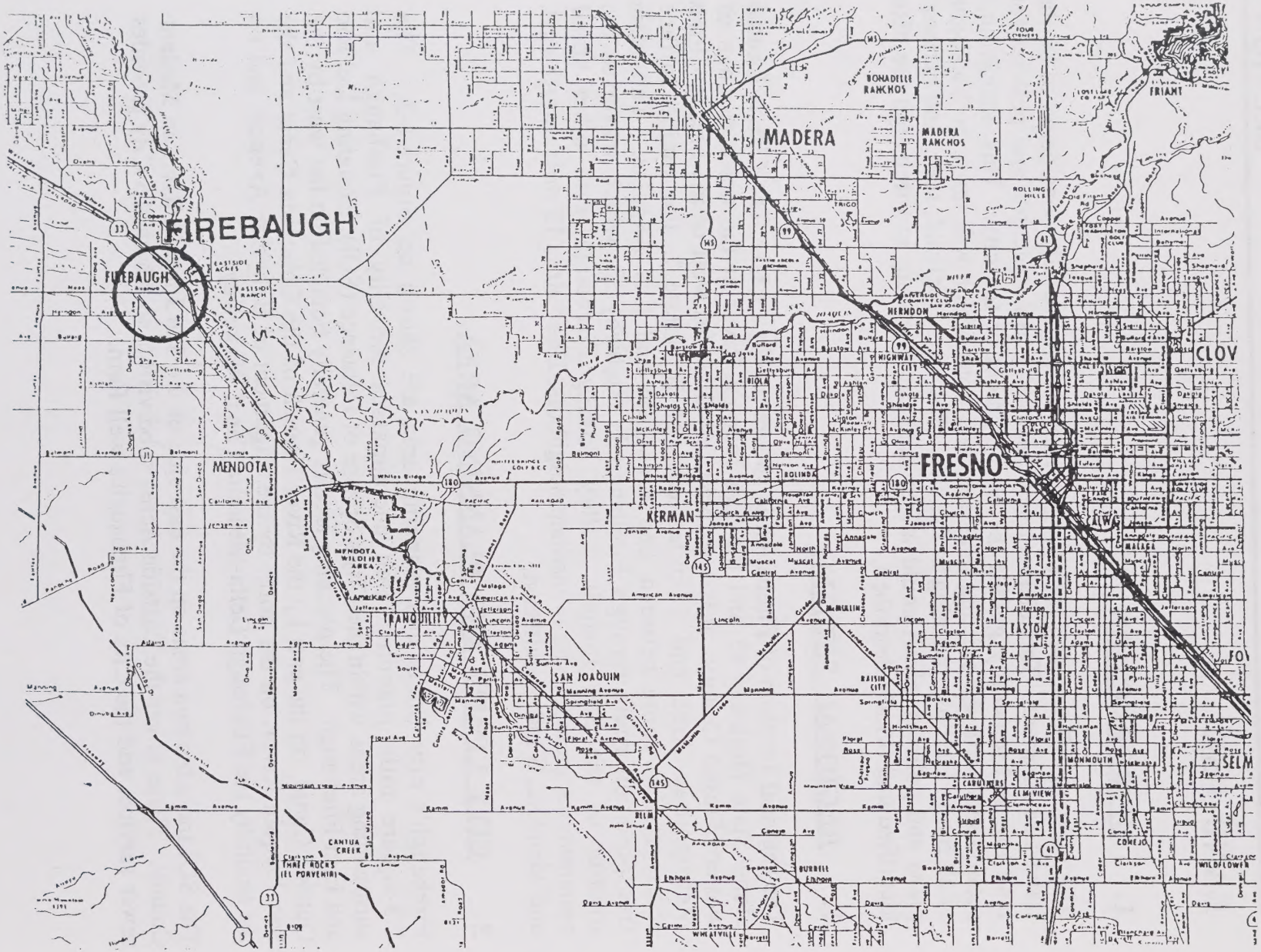
2. REGIONAL SETTING

The regional location of Firebaugh is shown on Figure I-1. The City is located along State Highway 33 and the San Joaquin River at the northern edge of western Fresno County. It is approximately 29 miles west of the Fresno-Clovis Metropolitan Area and 18 miles east of Interstate 5, the major surface transportation route between San Francisco and Los Angeles. The main transportation route through Firebaugh is Highway 33, which traverses the interior of the San Joaquin Valley linking Firebaugh with other small communities including its immediate neighbors, Dos Palos, 13 miles northwest, and Mendota, 8 miles southeast.

3. CITY LIMITS AND PLANNING AREA

Firebaugh's city limits and planning area are shown on Figure I-2. The 5.3-square mile planning area encompasses the City of Firebaugh and surrounding areas within the City's Sphere of Influence (SOI), including Del Rio and East Firebaugh. The planning area is generally bounded on the west by the Outside Canal, on the east by the River Branch of the Columbia Canal and the San Joaquin River, on the north by the alignment of Behymer Avenue, and on the south by the Firebaugh Delta-Mendota Canal Wasteway.

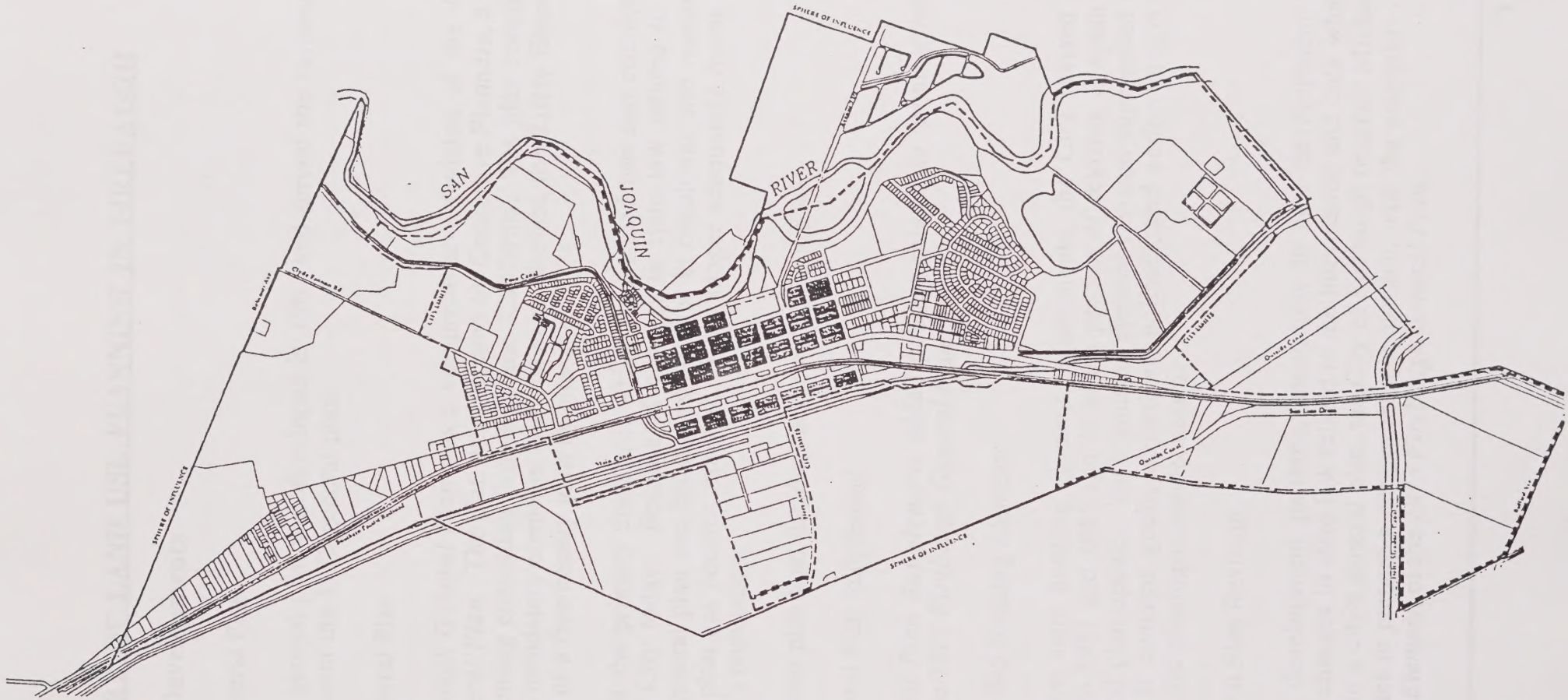
The SOI includes two areas on the east side of the San Joaquin River in Madera County. These cover the Eastside Acres subdivision, to which the City provides sewer service, and the City of Firebaugh's well farm.



MICHAEL PAOLI AND ASSOCIATES

REGIONAL LOCATION

FIGURE I-1



Sphere of Influence
and City Boundaries

Figure I-2

4. HISTORY OF LAND USE PLANNING IN FIREBAUGH

a. Early Developments

(1) 1962 General Plan

The City's first general plan was developed in 1962 and served the community until the adoption of the 1973 general plan.

(2) 1973 General Plan

The *1973 Firebaugh General Plan* was a comprehensive revision of the *1962 Firebaugh General Plan.* The plan was prepared by Consultive Planners, a city and regional planning consulting firm in Fresno, California. The plan contained eight of the nine mandatory elements, with the ninth element, the Safety Element, prepared as part of a five-county joint document in 1974.

The 1973 plan is the primary document which guides land use and circulation planning in the City today. Because of changes in state law related to the contents of the general plan and because of changes in conditions and resources in the City, the plan has become obsolete. It no longer adequately meets the needs of the City's population.

The existing general plan land use map is shown on Figure I-3.

(3) 1978 General Plan Supplement

The *1978 General Plan Supplement* added policies related to urban growth management to the *1973 Firebaugh General Plan.*

(4) 1981 and 1985 Housing Elements

Responding to new state housing element requirements, the City revised its housing element in 1981 and 1985 and is in the process of revising it again as part of this general plan update. Each housing element revision superseded its earlier version. It contains goals, objectives, policies, and action programs related to six specific housing-related concerns.

(5) 1991 General Plan Revision

Due to land use development patterns, constraints to new development in Firebaugh, and to changes in state law related to the information and data which must be included in a city's general plan, the City of Firebaugh retained Michael Paoli and Associates to prepare a comprehensive revision, with the exception of the *Seismic Safety Element*, of the *1973 Firebaugh General Plan.*

5. ANNEXATION HISTORY AND POLICY

The City of Firebaugh was incorporated on September 17, 1914. Figure I-4 shows the historical pattern of annexation and Table I-1 lists the annexations which have occurred.

The Cortese-Knox Local Government Reorganization Act (California Government Code Section 56000 et seq.) controls annexations to cities in California. With some minor exceptions, any land which is contiguous to a city may be annexed. Annexations should not result in the creation of islands of unincorporated land surrounded by the city and should not result in the creation of "fingers" (long narrow strips) of land into unincorporated areas.

Annexations must be approved by both the affected city and by the Local Agency Formation Commission. If there are less than twelve registered voters living within the territory proposed for annexation, the annexation is referred to as an uninhabited annexation. If written protest is received from landowners owning a majority of the assessed value of land proposed for annexation, the annexation proposal is terminated. If written protest is received from less than a majority, the proposal is approved without an election.

If twelve or more registered voters live within the territory proposed for annexation, it is referred to as an inhabited annexation. Again, if written protest is received from landowners owning a majority of the assessed value of land proposed for annexation, the annexation proposal is terminated. If written protest is received from less than 25 percent of the registered voters who live in the territory, and less than 25 percent of the number of landowners who also own less than 25 percent of the assessed value of land in the territory, the proposal is approved without election. If, however, written protest is received from less than 50 percent, but at least 25 percent of the registered voters, or at least 25 percent of the number of landowners owning at least 25 percent of the assessed value of land in the territory, an election is called for on the question of annexation.

6. ZONING

Under state law, zoning controls the specific use of land within a city and county. State law provides for zoning, but with some minor exceptions related to residential uses and open space, does not set forth rigid guidelines or requirements which must be met. Some minimum standards are established for its adoption, amendment, and administration. The most significant requirement set forth in state law regarding zoning is that it be consistent with the general plan.

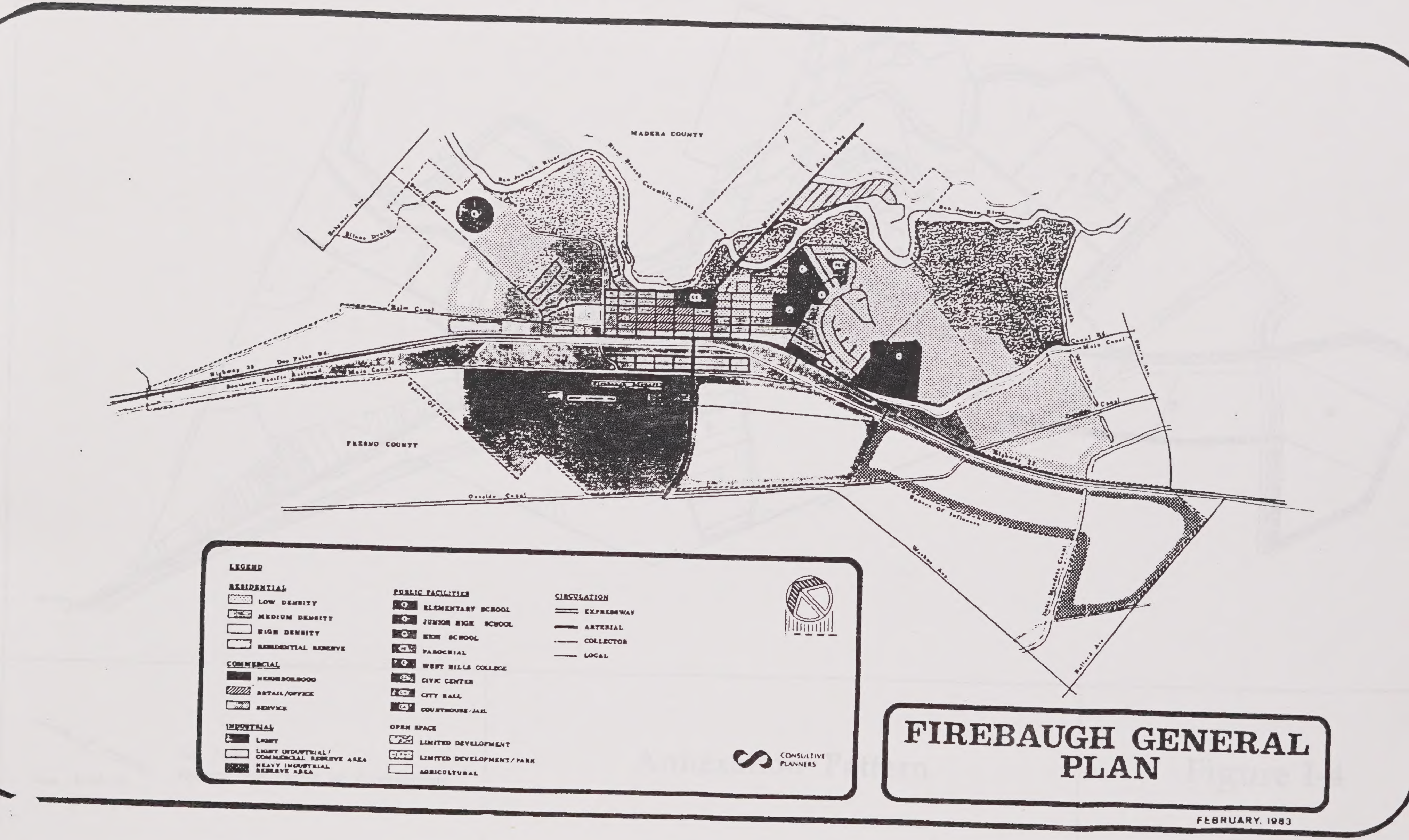

MADERA COUNTY
San Joaquin River
River Branch Columbia Canal
Helm Canal
Dos Palos Rd.
Highway 33
Southern Pacific Railroad
Main Canal
Firebaugh Airport
Sphere Of Influence
FRESNO COUNTY
Outside Canal
Madera Ave
San Joaquin River
Canal Rd.
Main Canal
Canal
Highway 33
Sphere Of Influence
Washoe Ave
Delta Mendota Canal
Bullard Ave
LEGEND
RESIDENTIAL
LOW DENSITY
MEDIUM DENSITY
HIGH DENSITY
RESIDENTIAL RESERVE
COMMERCIAL
NEIGHBORHOOD
RETAIL/OFFICE
SERVICE
INDUSTRIAL
LIGHT
LIGHT INDUSTRIAL/ COMMERCIAL RESERVE AREA
HEAVY INDUSTRIAL RESERVE AREA
PUBLIC FACILITIES
ELEMENTARY SCHOOL
JUNIOR HIGH SCHOOL
HIGH SCHOOL
PAROCHIAL
WEST HILLS COLLEGE
CIVIC CENTER
CITY HALL
COURTHOUSE/JAIL
OPEN SPACE
LIMITED DEVELOPMENT
LIMITED DEVELOPMENT/PARK
AGRICULTURAL
CIRCULATION
EXPRESSWAY
ARTERIAL
COLLECTOR
LOCAL
CONSULTIVE PLANNERS
FIREBAUGH GENERAL PLAN
FEBRUARY, 1983

Figure I-3

N

Scale: 0 800 ft

See Table I-1 for Names and Dates of Annexations

Annexation Pattern

Figure I-4

TABLE I-1

ANNEXATION

Annexation No.	Designation	Effective Date
1	Bailey-Roggero Addition	4-26-45
2	Union Ice company Addition	5-24-45
3	Williams Addition	5-24-46
4	Riverview Addition	2-13-47
5	Poso Canal Addition	6-12-47
6	---	6-15-48
7	---	2-13-52
8	---	9-10-53
9	---	5-13-54
10	---	5-13-54
11	---	9-19-55
12	Blue Bell Acres	11-24-55
13	Central Annexation	1-12-56
14	Indart Farm Labor Camp	10-9-59
15	DeLucca Heights	12-29-61
16	Bishop School Annexation	1-24-62
17	Central Annexation #2	3-30-62
18	DeLucca Heights #2	7-12-62
19	Blue Bell Acres #2	5-2-63
20	DeLucca Heights #3	6-28-63
21	Antle Addition	11-25-63
22	Burkhart Addition	8-25-64
23	Valley Seed Growers Addition	11-24-64
24	Green Acres Annexation	12-5-66
25	Lower San Joaquin Addition	12-22-66
26	Cardello-Enrico Annexation	10-22-68
27	Thomason Addition	9-9-69
28	Cardello St. & Dotta Ave. Annexation	6-28-61
29	Union Ice Company Annexation	6-28-71
30	Airport Expansion Addition	12-26-72
31	South Water Storage Tank Addition	3-12-73
32	West Airport Annexation	9-23-74
33	Taxiway Annexation	9-23-74
34	Industrial Park-Sewer Plant Addition	3-11-75
35	River Farms Annexation	5-27-75
36	Firebaugh Sewer Plant Reorganization	12-2-80
37	Wrazel Reorganization	4-7-81
38	River Reorganization	7-28-81
39	Indart Reorganization	1-15-86
40	Storey Avenue Reorganization	3-5-89

Source: Fresno County Local Agency Formation Commission

Firebaugh's current zoning ordinance was adopted in 1979. It has been amended several times over the years. The most recent amendment created a new residential district, R-1-4.25, which permits residential development on lots with a minimum square footage of 4,250 square feet.

The City's existing zone districts are described below:

R-1 Single Family Residential. The R-1 District permits the development of single family residences and associated uses and some public services.

The minimum lot size is 6,500 square feet. Front and rear yards must be at least 20 feet, and side yards must be at least 5 feet, except on corner lots where the street side yard must be at least 10 feet. No main building may exceed 25 feet in height, and no accessory building may exceed 12 feet. Two off-street parking spaces are required.

R-1-4.25 Single Family Residential. The R-1-4.25 District is similar to the R-1 District, except that lots may have a minimum square footage of 4,250 square feet, the front yard requirement is 10 feet, the rear yard requirement is 15 feet, and only one off-street parking space is required.

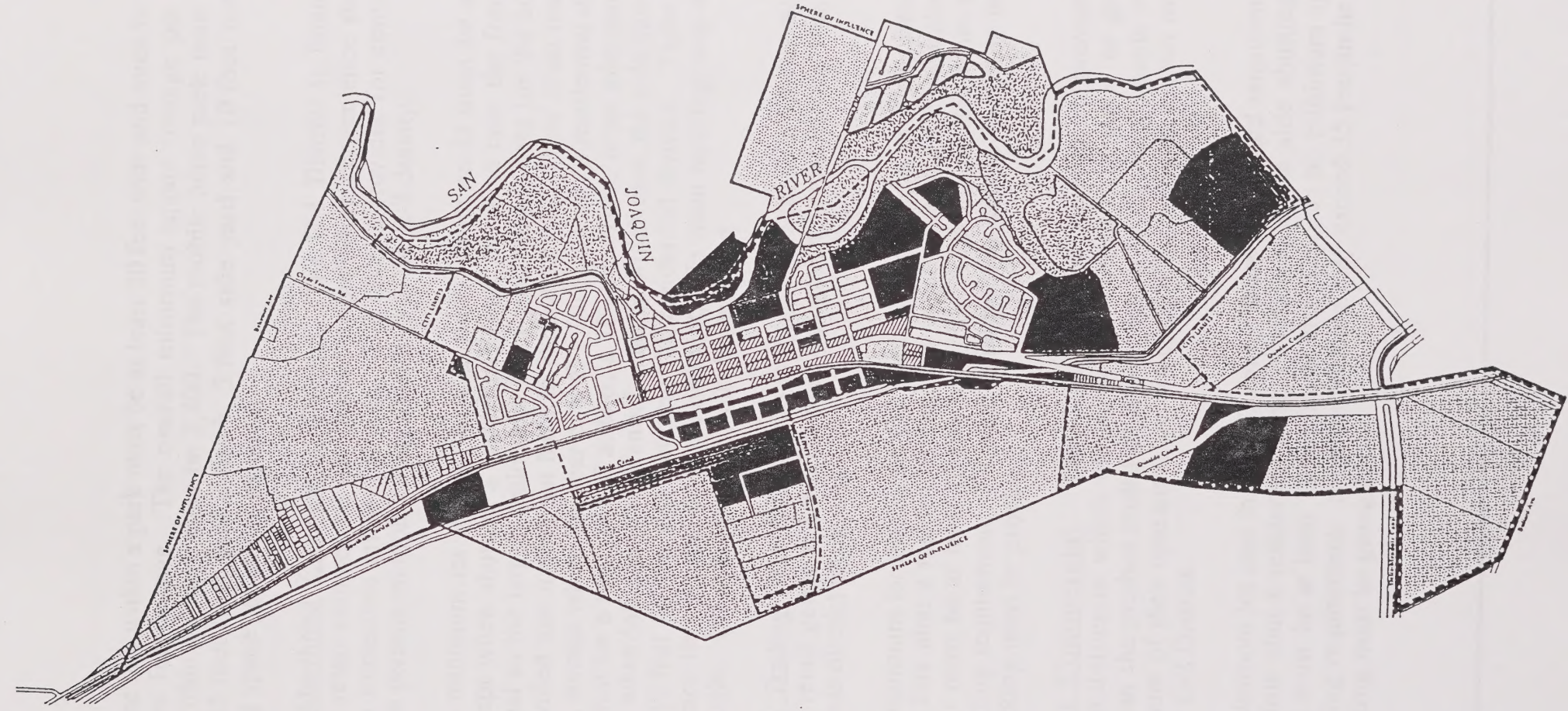
R-2 Low Density Multiple Family Residential. The R-2 District is intended to allow the development of duplexes, triplexes, and single family residences. Lot size, yard, and height requirements are identical to those in the R-1 District. Off-street parking is required. Site plan review is required when more than one building is located on a lot.

R-3-A Medium Density Multiple Family Residential, One Story. The R-3-A District is intended to provide for the development of multiple family dwellings, apartment houses, and duplexes.

The minimum lot area is 7,500 square feet and development is permitted at a density of 2,000 square feet per dwelling unit. Buildings are limited to one story (20 feet) in height. Front and rear yards must have a minimum depth of 15 feet, while side yards must have a minimum width of 10 feet. There must be at least 10 feet between dwelling units on the same lot and 6 feet between dwellings and accessory buildings. Off-street parking is required. Site plan review is required when more than one building is placed on a lot.

R-3 Medium Density Multiple Family Residential. The R-3 District is identical to the R-3-A District except that it is not limited to 1 story in height. The maximum permitted height is 2 story (25 feet).

T-P Residential Mobile Home Park. The T-P District is intended to provide for the accommodation of residential mobile homes in unified parks of not less than one and one-half acres in area.



LEGEND

Residential
Industrial
Open Space
Del Rio
Public and Quasi-Public
Vacant
Commercial
Agriculture

0 800 ft

Generalized Land Use

Figure I-6

Mobile home lots within a park must be at least 30 feet wide and must be at least 1,500 square feet in size. The overall minimum square footage per mobile home lot within the park must be 2,400. The mobile home park must have a minimum 15 foot front yard setback, 5 foot side yard and 10 foot rear yard. One parking space per unit is required.

C-1 Neighborhood Commercial District. The C-1 District is intended to provide for retail commercial use limited to providing convenience shopping goods to an immediate residential area. The district provides for commercial uses and also permits multiple family dwellings at the R-3 density.

There is no minimum lot area in the C-1 zone. Front yards must be at least 10 feet, except when abutting a residential zone, in which case the front yard must be equal to the largest residential front yard requirement for the adjacent district, provided that it does not have to exceed 20 feet. There is no rear yard requirement, except where the rear of a C-1 District abuts a residential district, then there must be a rear yard of at least a 10 feet. There is no minimum side yard, except when lots abut a residential zone, in which case, the side yard must be at least 10 feet on the side abutting the residential district. There is no minimum space between building requirement. No main building may exceed 20 feet in height. Off-street parking must be provided.

C-2 Central Trading. The C-2 District is intended to provide for the sale of a full range of retail goods and professional and governmental offices within the central business district of the city.

There is no minimum lot size in the C-2 zone. There are no yard requirements, except when lots abut a residential zone, in which case, the side abutting the residential lot must be at least 10 feet in width. There is no minimum space between building requirement. No main building may exceed 35 feet in height. Off-street parking must be provided.

C-3 General Commercial. The C-3 District is intended to provide for commercial activities in which the service performed is of equal or greater importance than the product traded or which, due to space requirements or the distinctive nature of their operation, are not compatible with and are not usually located in the C-2 District.

There is no minimum lot area in the C-3 zone. There are no yard requirements, except when lots abut a residential zone, in which case, the side abutting the residential lot must be at least 10 feet in width. There is no minimum space between building requirement. No main building may exceed 35 feet in height. Off-street parking must be provided.

M-1 Light Manufacturing. The M-1 District allows for retail and wholesale stores or storage, service establishments, and other light industrial uses.

There are no minimum lot area requirements in the M-1 District. There are no yard requirements except when an M-1 District abuts a residential street or lot. Front, rear, and side yards must then be at least 15 feet. When a rear lot line of a corner lot in an M-1 District abuts a residential district, there shall be a street side yard of at least 10 feet. No building or structure may exceed 50 feet in height. Off-street parking is required.

M-2 General Manufacturing. The M-2 District provides for the operation of industries, including retail and wholesale stores or storage, service establishments, light industrial and manufacturing uses.

Development standards related to yards, building heights, and parking are identical to those of the M-1 District.

U-R Urban Reserve. The U-R District provides for substantially undeveloped areas planned for future urban use, where because the areas lack public facilities or services, or because the need for urban expansion within them is not immediate, it is necessary to prevent the development of uses or structures which might be premature or conflict with the future planned urban use of the areas.

The U-R District permits agriculture and related fruit, floral, trees, and other horticultural activities, the keeping of bovine animals and horses, sale of agricultural products, and one-family dwelling units (subject to a conditional use permit) and associated activities.

The U-R District has a minimum 5-acre lot requirement and 35-foot front yard, 20-foot side yard, and 20-foot rear yard requirements.

O Open Space Recreation. The O District provides for the preservation of public and quasi-public uses of a permanent open space or recreation nature and limits development in areas subject to flooding, excessive erosion, or other man-made or natural hazards.

The district permits recreational activities, agricultural uses, flood control facilities, wastewater treatment plants, canals, cemeteries, country clubs, golf courses, and other public service facilities.

There are few development standards, other than a limit of one caretaker's unit per lot, a maximum lot coverage by buildings or structures of ten percent, and some off-street parking requirements for facilities intended to serve congregations of people.

P Planned Unit. The P District is an overlay zone intended for parcels which are suitable for planned unit developments and for which detailed development plans have been submitted and approved.

G Government. The G District is intended to provide for uses of a government or public nature, including civic centers, courthouses, parks, fire stations, schools, jails, airports, public health clinics, etc.

Development standards are similar to those in the C-2 District.

Zoning in Firebaugh is shown on Figure I-5. The distribution of land among the various zone districts is shown on Table I-2. The acreages do not include streets, roads or alleys, or canal and railroad rights-of-way. These account for about another 328 acres.

As shown on Table I-2, about 23 percent of land in Firebaugh is zoned for some type of residential use, with single family zoning accounting for about 16 percent of the total. About 29 percent of the land in Firebaugh is zoned for industrial use, with the majority of it being zoned as general industrial. This land is primarily located west of Highway 33, between Bullard and Nees Avenues. Firebaugh also has a significant percentage of land (almost 21 percent) designated for open space. This land is located along the San Joaquin River and in the southern portion of the City. Commercial zoning is applied to 5.5 percent of the City's land and is concentrated in the downtown business district and along Highway 33. The U-R (Urban Reserve) and P (Planned Unit Development) zones are not currently applied to any land in the City.

A comparison of the City's general plan with its zoning map revealed no significant inconsistencies between the two.

7. EXISTING LAND USE

A land use survey of the City of Firebaugh and its SOI was conducted in April and May 1991. The results of the survey are summarized in Table I-3 and the generalized land uses as identified in the survey are shown on Figure I-6.

Of the 300 acres which are open space, most are located adjacent to the San Joaquin River and are not developable. Of the 179 acres which are vacant, the greatest is located along Highway 33, north of the City, and is designated for light industrial use. Vacant land designated for residential use consists primarily of one subdivision site located in the northern portion of the City and a few isolated residential lots in the southern portion of the City. Future residential growth, for the most part, will be dependent upon the availability of land which is now in agricultural use. As of May 1991, there were 1,860 acres of land in

TABLE I-2

ACREAGE BY ZONING CATEGORY
CITY OF FIREBAUGH
1991

Zoning Category	Acreage	% of Total
0	393	20.7
G	89	4.7
R-1-4.25	18	1.0
R-1	281	14.8
R-2	95	5.0
R-3	25	1.5
T-P	5	0.3
C-1	4	0.2
C-2	16	0.8
C-3	85	4.5
M-1	202	10.7
M-2	354	18.7
TOTAL	1,567	100.0

Source: Firebaugh Zoning Map and Fred N. Rabe Engineering, Inc.

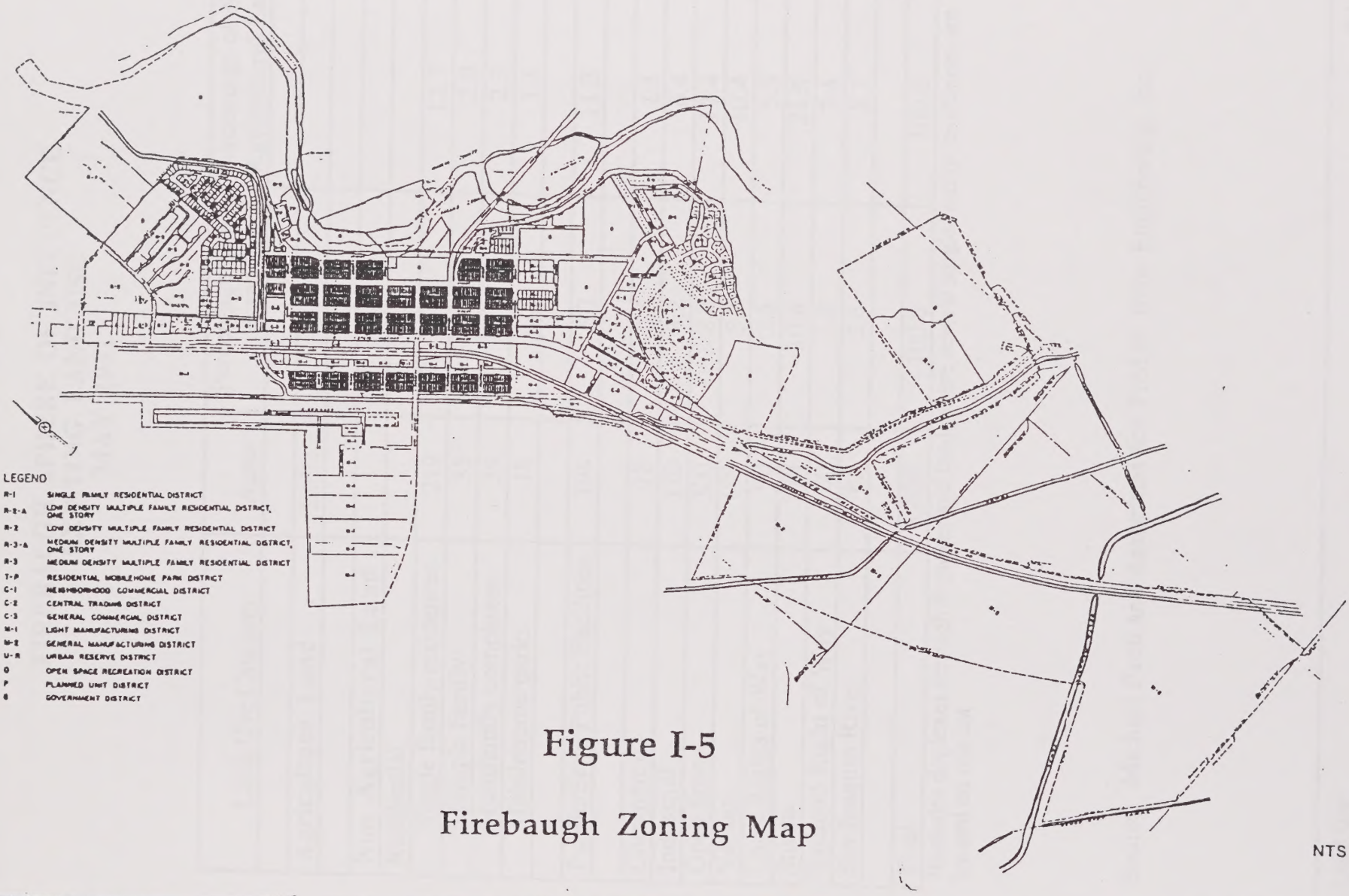


Figure I-5

Firebaugh Zoning Map

NTS

TABLE I-3

FIREBAUGH SPHERE OF INFLUENCE
EXISTING LAND USE
MAY 1991

Land Use Category	Acres	Percentage of All Land	Percentage of Non Agricultural Land
Agriculture Land	1,692	49.7	
Non Agricultural Land			
Residential			
Single family residences	219	6.4	12.7
Multiple family[1]	35	1.0	2.0
Multifamily complexes	39	1.1	2.3
Mobilehome parks	18	0.5	1.1
Public/Semi Public Facilities	194	5.7	11.3
Commercial	18	0.5	1.1
Industrial	110	3.2	6.4
Open Space	300	8.8	17.4
Vacant	179	5.3	10.4
Canal Rights of Way	90	2.6	5.3
Streets	370	10.8	21.5
Railroad Right of Way	60	1.8	3.4
San Joaquin River	85	2.6	5.1
Total	3,409	100.0	100.0

[1]Includes duplexes through 8-plexes and land where several single family residences are located on one lot

Source: Michael Paoli and Associates and Fred N. Rabe Engineering, Inc.

agricultural use. Several hundred of these acres are designated for industrial use. About 85 acres designated for residential use are in agricultural use.

The City of Firebaugh owns 345 acres west and 15.34 acres east of the San Joaquin River within its SOI. Use of the land includes the sewage treatment plant site, public parks, justice court site, City Hall (including police and fire departments), well sites, and open space along the San Joaquin River. City-owned land is shown on Figure I-7.

8. LOCAL AGENCY FORMATION COMMISSION

In 1985, the various state laws regulating city and special district organization and annexations were consolidated in the Cortese/Knox Local Government Reorganization Act (Government Code Section 56000 et seq.).

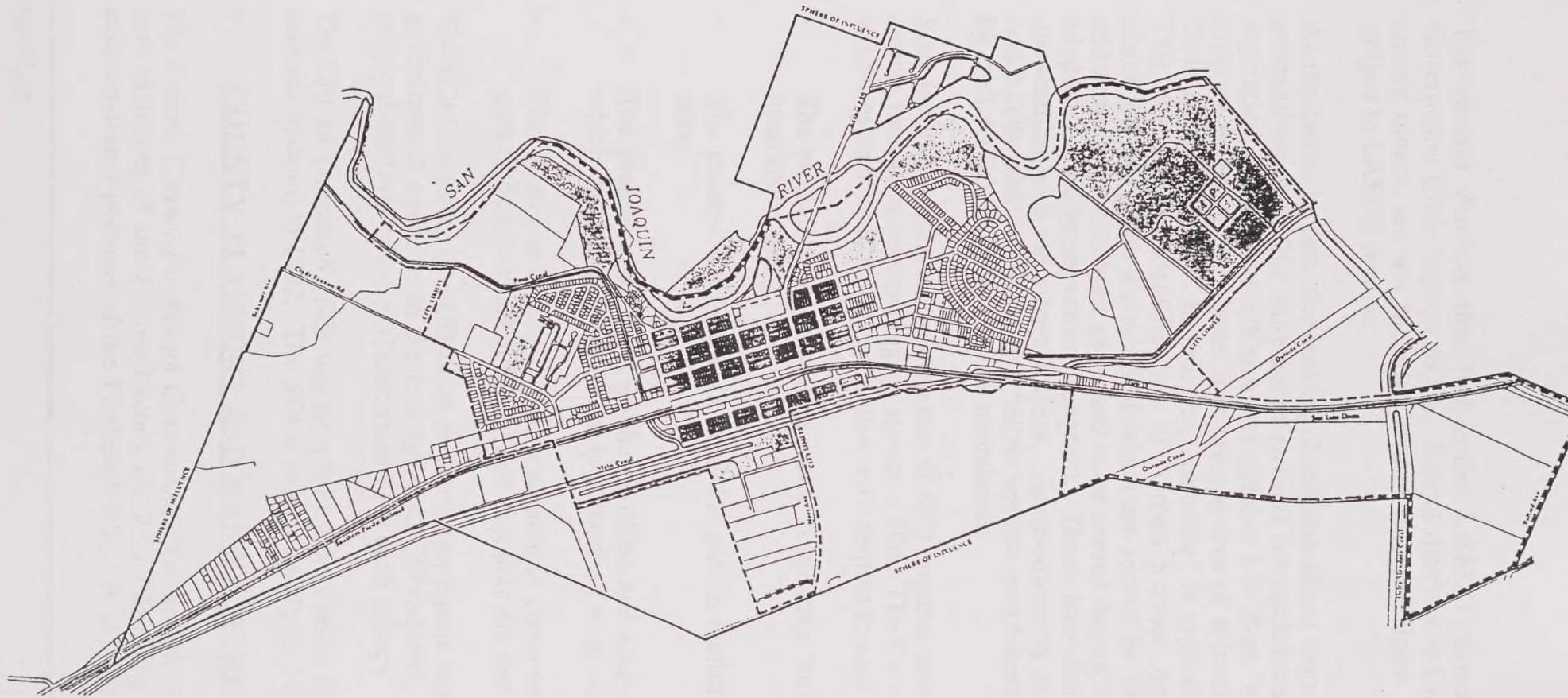
The 1963 Knox-Nissbet Act, which was superseded by Cortese/Knox, created local agency formation commissions (LAFCOs) in each county in California to regulate the organization and extensions of services provided by cities and special districts. The act declares that:

> among the purposes of the commission are the discouragement of urban sprawl and encouragement of the orderly formation and development of local agencies based upon local conditions and circumstances. One of the objects of the commission is to make studies and to obtain and furnish information which will contribute to the logical and reasonable development of local agencies in each county development of local agencies so as to advantageously provide for the present and future needs of each county and its communities" (Government Code Section 56301).

In meeting these responsibilities, each LAFCO is required "to review and approve or disapprove, with or without amendments, wholly, partially, or conditionally, proposals for changes of organizations or reorganization" (Government Code Section 56475[a]).

According to Section 56201 of the Government Code, "change of organization" means any of the following:

- A city incorporation
- A district formation
- An annexation to, or detachment from, a city or district
- A disincorporation of a city
- A district dissolution
- A consolidation of cities or special districts



Scale
0 800 ft

LEGEND

City Owned Land

City-Owned Land

Figure I-7

The special districts that fall under LAFCO jurisdiction are defined in Government Code Section 56036. School districts and redevelopment agencies, among others, are not included within this definition .nd are, therefore, not subject to LAFCO review.

As the basis, in part, for making decisions about organizational changes and annexations, LAFCO must adopt an SOI for each local agency subject to its regulation. The Cortese/Knox Act defines a SOI as "a plan for the probable ultimate physical boundaries and service area of a local agency" (Government Code Section 56076). In practice, "ultimate" is typically defined as 20 years. This includes the identification of "Urban Service Area" boundaries, which identify areas within a city's SOI which are served by urban facilities, utilities, and services or which are proposed to be served during the first five years of an adopted capital improvement program. These boundaries shall be adopted in cooperation with the affected cities. Annexations by the affected city of land which falls within an identified "urban service area boundary" may not be denied by the LAFCO which adopts the boundaries.

State law (Government Code Section 56425) requires that LAFCO must consider certain factors in determining an agency's SOI. The Commission must prepare a written statement of its determination with respect to each of the following:

- The present and planned land uses in the area, including agricultural and open space land.
- The present and probable need for public facilities and services in the area.
- The present capacity of public facilities and adequacy of public services which the agency provides or is authorized to provide.
- The existence of any social or economic communities of interest in the area if the commission determines that they are relevant to the agency.

The SOI is used by LAFCO in its review of proposals to alter the shape of local governmental agencies in the county. LAFCO requires, as a policy, that each proposal conform to the SOI determined for each agency.

The City of Firebaugh's SOI was adopted by the Fresno County LAFCO in 1975 and was updated in 1982. The SOI is shown on Figure I-2.

9. COUNTY PLANNING AND LAND USE REGULATION

The *Fresno County Firebaugh Community Plan* and the *Del Rio Specific Plan*, both elements of the *Fresno County General Plan*, regulate land use in the unincorporated portions of the Firebaugh SOI. A small portion of land within

the SOI is located in Madera County and land use is regulated by the *Madera County General Plan.*

The *Del Rio Specific Plan* covers a 94-acre area located on the east side of Highway 33 (also called Dos Palos Road in the vicinity of Del Rio) (see Figure I-8). The area is partially vacant and partially developed with single family residences, two churches, two truck repair and storage businesses, and a butane storage business. The plan designates Del Rio as medium density residential reserve, but does not encourage development of the vacant lots in the area.

With four exceptions, the *Fresno County Firebaugh Community Plan* designates unincorporated land for agricultural use (see Figure I-9). The exceptions are an area near the north end of the Firebaugh Airport which is designated as industrial reserve; an area at each end of the Firebaugh Airport, each designated as open space; an area west of the Main Canal, between Nees Avenue and the Outside Canal, designated as light industrial reserve; and an area at the southern end of the City, north of the Firebaugh Wasteway, between Highway 33 and the Main Canal, which is designated as residential reserve. A description of the land use categories and applicable County zoning follows:

Agriculture. The agricultural designation is applied to land set aside for the production of crops and livestock, and the location of necessary agricultural commercial centers, agricultural processing facilities, and certain nonagricultural industries.

The AE-20 (exclusive agriculture, 20-acre minimum) and AE-40 (exclusive agriculture, 40-acre minimum) zone districts are compatible with the agricultural designation and the AL (limited agriculture) and AC (agricultural commercial center) districts are conditionally compatible. The AE zone is intended to be an exclusive district for agriculture and for those uses which are necessary and an integral part of the agricultural operation. The AL zone is a limited agricultural zone with a minimum 20-acre lot size limitation and is utilized by the County to preserve areas designated for future urban development. The AC zone is intended to provide for the location of commercial centers within agricultural areas for the purpose of providing food and services to the surrounding farm community. The AC zone is now only applicable to any parcel so zoned prior to September 20, 1988.

Open Space. The open space designation means land or water areas which are essentially unimproved and planned to remain open in character. The open space designation has been applied at areas at both ends of the Firebaugh Airport because they are considered to be hazardous areas.

The AL and RE (recreation) zone districts are conditionally compatible with the open space designation. The AL designation is explained above. The RE zone is

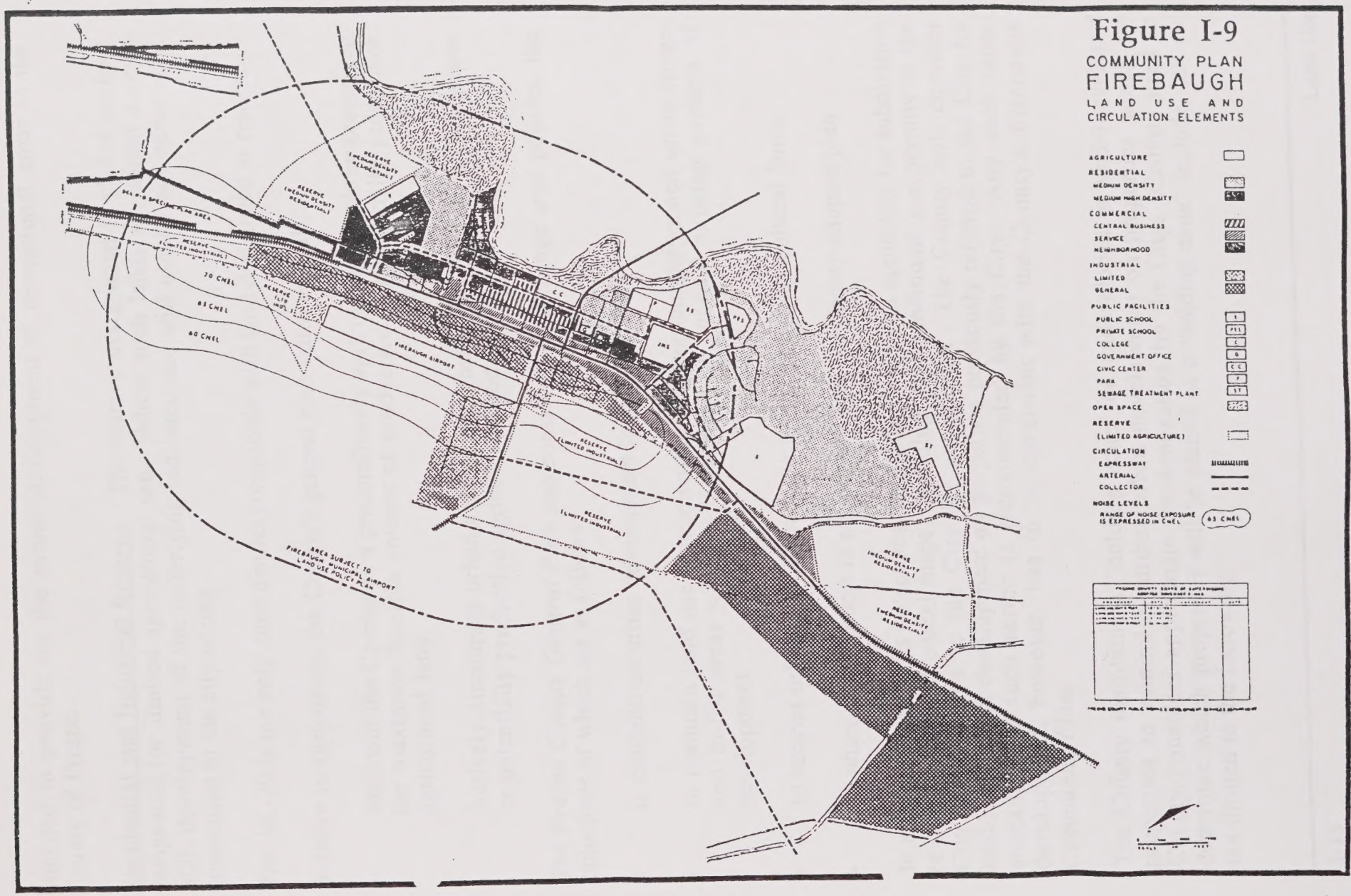


Figure I-9
COMMUNITY PLAN
FIREBAUGH
LAND USE AND
CIRCULATION ELEMENTS
AGRICULTURE
RESIDENTIAL
MEDIUM DENSITY
MEDIUM HIGH DENSITY
COMMERCIAL
CENTRAL BUSINESS
SERVICE
NEIGHBORHOOD
INDUSTRIAL
LIMITED
GENERAL
PUBLIC FACILITIES
PUBLIC SCHOOL
PRIVATE SCHOOL
COLLEGE
GOVERNMENT OFFICE
CIVIC CENTER
PARK
SEWAGE TREATMENT PLANT
OPEN SPACE
RESERVE
(LIMITED AGRICULTURE)
CIRCULATION
EXPRESSWAY
ARTERIAL
COLLECTOR
NOISE LEVELS
RANGE OF NOISE EXPOSURE IS EXPRESSED IN CNEL
65 CNEL
70 CNEL
65 CNEL
60 CNEL
FIREBAUGH AIRPORT
RESERVE (MEDIUM DENSITY RESIDENTIAL)
RESERVE (LIMITED INDUSTRIAL)
AREA SUBJECT TO FIREBAUGH MUNICIPAL AIRPORT LAND USE POLICY PLAN

intended to provide for the proper development of recreational areas in the County of Fresno.

Residential and Industrial Reserve. The reserve designation is placed on land designated for limited agricultural use. Where such lands are within a city's SOI, development of the underlying indicated use will usually not occur until annexation to the city occurs.

The AL-20 is the only zone district compatible with land designated as reserve.

Relative to agriculture, the County's general plan states as goals:

- Maintain the County as a predominantly agricultural region by preserving the maximum feasible amount of productive and potentially productive agricultural land.

- Actively discourage urban and other intensive development on productive or potentially productive agricultural land.

The *Fresno County General Plan* also contains a set of fringe area policies, the objectives of which are as follows:

- to concentrate urban development in existing cities

- to maintain land use regulations in existing unincorporated urban fringe and in-fill areas which will stabilize or enhance existing patterns of development

- to restrict urban encroachment onto productive agricultural lands

- to phase development in accordance with the County-adopted plan

In accordance with its objectives, the County refers all applicants for subdivision (except residential parcel maps), rezoning, and conditional use permits in the City's fringe area to the City for annexation. The County will consider additional urban development on properties previously referred to the City for annexation if such action is recommended by the City. Any such urban development, however, has to be consistent with the County's *Firebaugh Community Plan.*

The County maintains a "holding zone" on undeveloped or underdeveloped properties to minimize further urban development on properties which the County considers appropriate for annexation by the City. Criteria used to determine which properties will be placed in a "holding zone" include, but are not limited to the following:

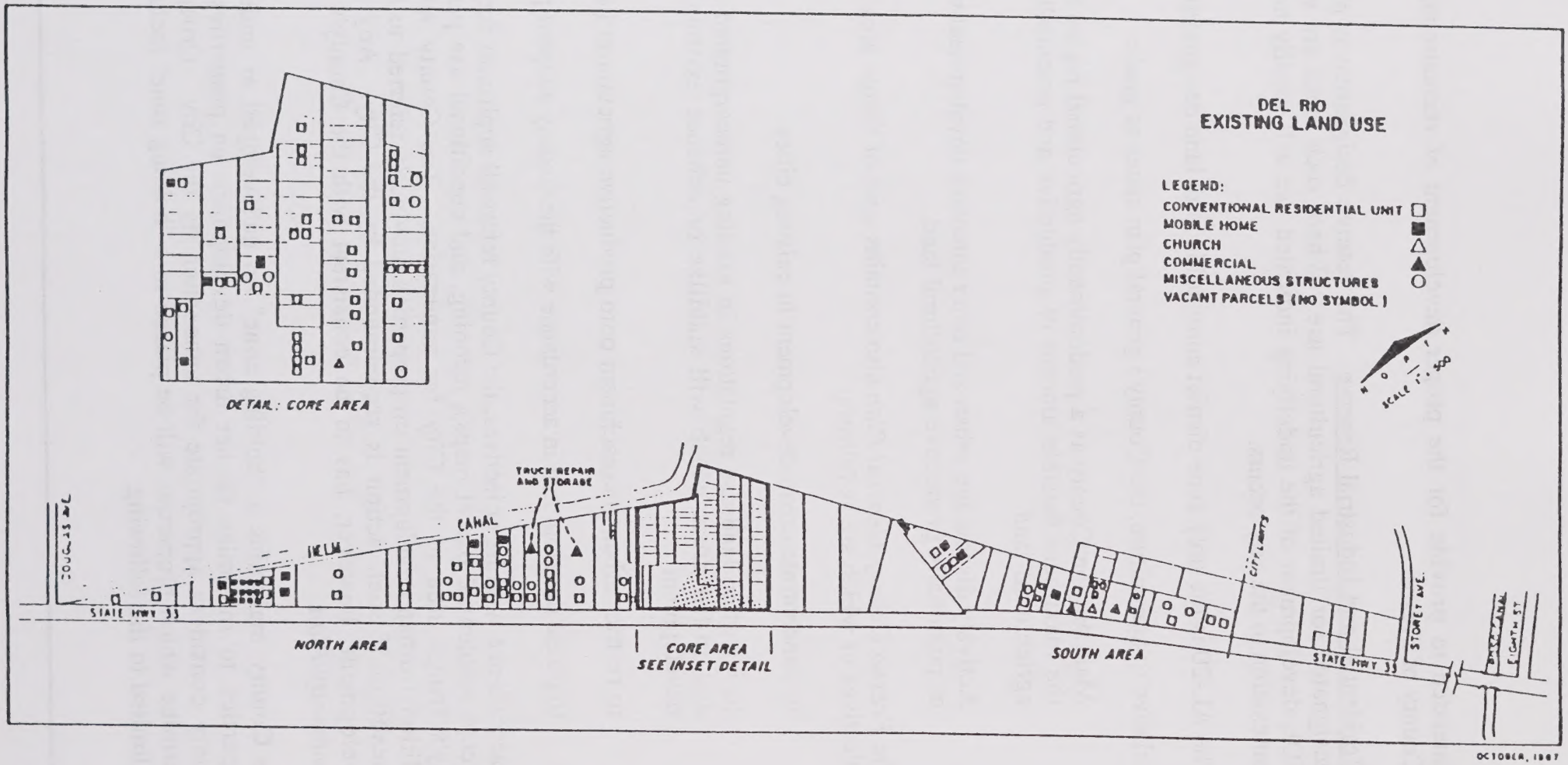


FIGURE I-8

DEL RIO

- the property is adjacent to the City
- the property adjoins a series or grouping of properties which are 80 percent vacant and in aggregate contain a minimum of five acres
- the property is proposed for commercial or industrial use on the County Community Plan, is a minimum of two acres in size, and abuts vacant property planned for a similar use

10. OTHER PLANS AND LAND USE REGULATION AFFECTING FIREBAUGH

a. Fresno County Integrated Waste Management Plan

Each county and its constituent cities cooperate in preparing a *Countywide Integrated Waste Management Plan* (CoIWMP). The CoIWMP consists of countywide siting elements as well as source reduction and recycling elements. The CoIWMP must be submitted to the California Integrated Waste Management Board for review and approval. Updates of these plans must be completed and submitted to the state board every five years.

The siting element of the CoIWMP must be approved by the county board of supervisors and the councils of a majority of the cities containing a majority of the county's incorporated population.

The element must include a resolution from each affected city and the county stating that the areas identified for the locations of new or expanded solid waste transformation or disposal facilities is consistent with the applicable local agency's general plan.

A preliminary draft of the Fresno County CoIWMP was completed in August 1991 and is currently being reviewed by the County and affected cities.

b. Fresno County Hazardous Waste Management Plan

Section 25135 of the Health and Safety Code encourages county-city cooperation in the preparation of hazardous waste management plans (HWMP). Counties may prepare and adopt HWMPs in lieu of the hazardous waste provisions of a COIWMP. Like the CoIWMP, the adoption of the plan requires the approval of the county supervisors as well as the councils of the cities containing a majority of the county's population.

A hazardous waste management plan is the primary planning document for hazardous waste management. Among other things, it must include a statement of goals, objectives and policies for both the siting of hazardous waste facilities

and the general management of hazardous wastes. It must also contain a schedule of plan implementation.

The *Fresno County Hazardous Waste Management Plan* was adopted by the County Board of Supervisors and a majority of the cities containing a majority of the County's population in 1988.

c. Airport Land Use Plan

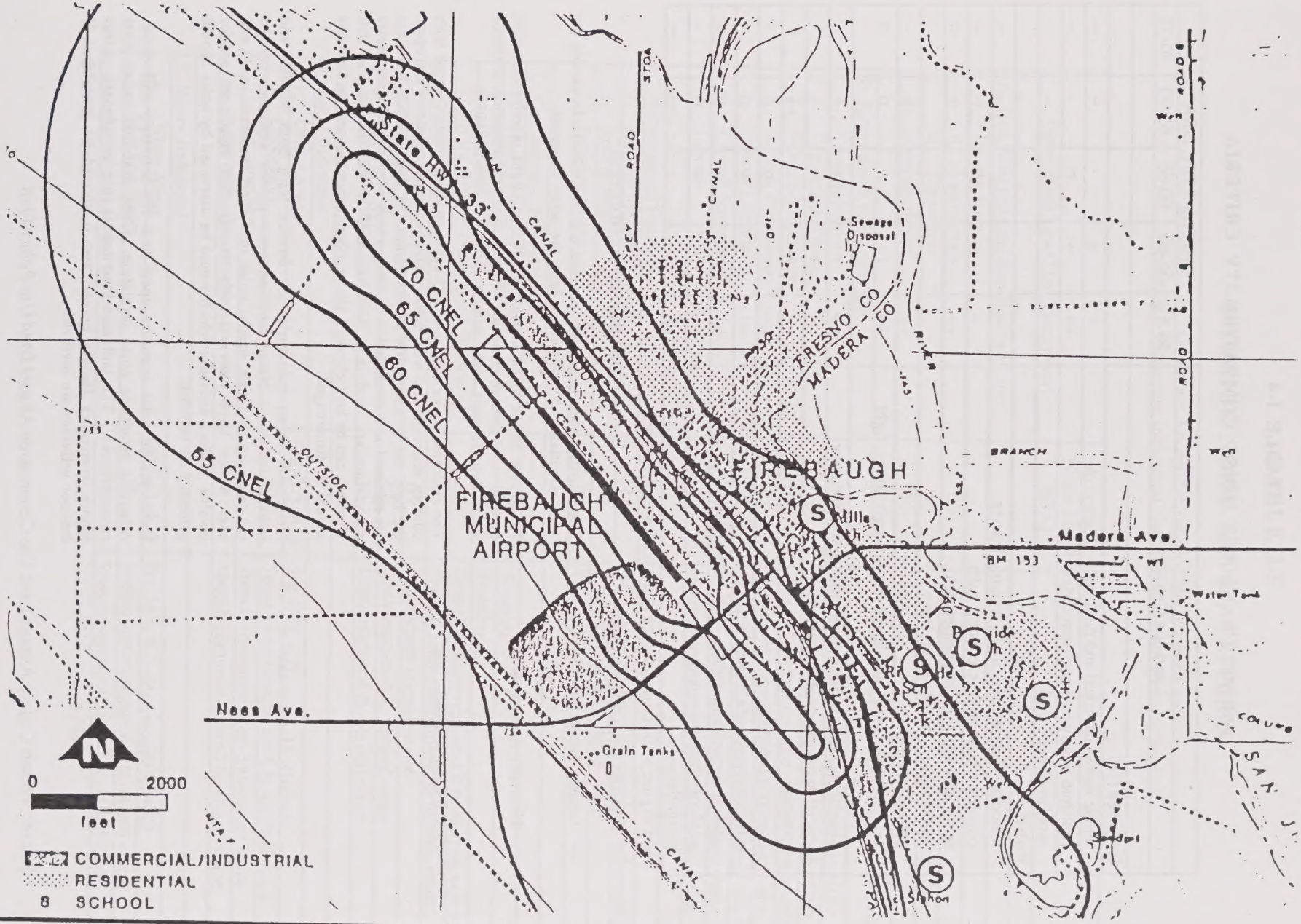
Fresno County has an Airport Land Use Commission (ALUC) which has prepared a comprehensive airport land use plan for the anticipated growth of the Firebaugh Municipal Airport and its environs. The plan specifies building height restrictions, allowable land use, and determines building standards within the planning area of the airport.

The ALUC plan noise contours for the airport are shown on Figure I-10 and the compatibility criteria for development within the contours is shown on Tables I-4 and I-5. The ALUC plan review area boundaries and safety zones are shown on Figure I-11 and the acceptable, conditionally acceptable, and unacceptable uses within the safety zones are shown on Table I-6.

The City of Firebaugh's General Plan must be consistent with the Airport Land Use Plan, unless specific findings are made its City Council. The City must submit the proposed update of its general plan to the ALUC for review. The commission must notify the City of any inconsistencies with the Airport Land Use Plan within 60 days. The City Council may overrule the findings of the commission by a two-thirds vote.

d. Williamson Act Contracts

The California Land Conservation Act of 1965 permits land owners to commit their land to long-term agricultural use by placing it under California Land Conservation Act contract (also referred to as Williamson Act contracts). Under the provisions of this act, the taxes on land under contract are reduced. Although a Williamson Act Contract is for one year, it commits land for a ten-year period. The contract is automatically renewed each year unless the property owner requests that it not be renewed. When a contract is not renewed, the taxes are increased gradually over a ten-year period until the normal tax status is reached. At the end of the ten-year period, the land may be used for non-agricultural purposes without the application of a tax penalty. A property owner may also request that his land be withdrawn from a Williamson Act Contract immediately. The procedure for canceling a Williamson Act contract in Fresno County is specified in California Government Code Section 51282. This section specifies that prior to giving approval to any contract cancellation request, the Board or City Council shall make one of the following findings:



FRESNO COUNTY AIRPORT LAND USE POLICY PLAN

FIREBAUGH MUNICIPAL AIRPORT
NOISE IMPACT (YEAR 2000)

FIGURE I-10

TABLE I-4

AIRPORT/LAND USE NOISE COMPATIBILITY CRITERIA

	CNEL or LDN, DBA*				
Land Use Category	50-55	55-60	60-65	65-70	70-75
Residential					
single family detached and duplexes	+	o	-	–	–
multiple family and transient lodging	++	+	o	-	–
mobile homes	+	-	-	–	–
Public					
schools, libraries, hospitals, nursing homes	+	o	-	-	–
churches, auditoriums, concert halls	+	o	o	-	–
transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
offices, retail trade	++	+	o	o	-
service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
general manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
cropland	++	++	++	++	+
livestock breeding	++	+	o	o	-
parks, playgrounds, zoos	++	+	+	o	-
golf courses, riding stables, water recreation	++	++	+	o	o
outdoor spectator sports	++	+	+	o	-
amphitheaters	+	o	-	–	–

*See Figure I-10 for location of contours for each airport.

LAND USE ACCEPTABILITY	INTERPRETATION/CONDITIONS
++ Clearly Acceptable	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+ Normally Acceptable	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
o Marginally Acceptable	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. the land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
- Normally Unacceptable	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
-- Clearly Unacceptable	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

Source: Fresno County Airport Land Use Commission *Airport Land Use Policy Plan*

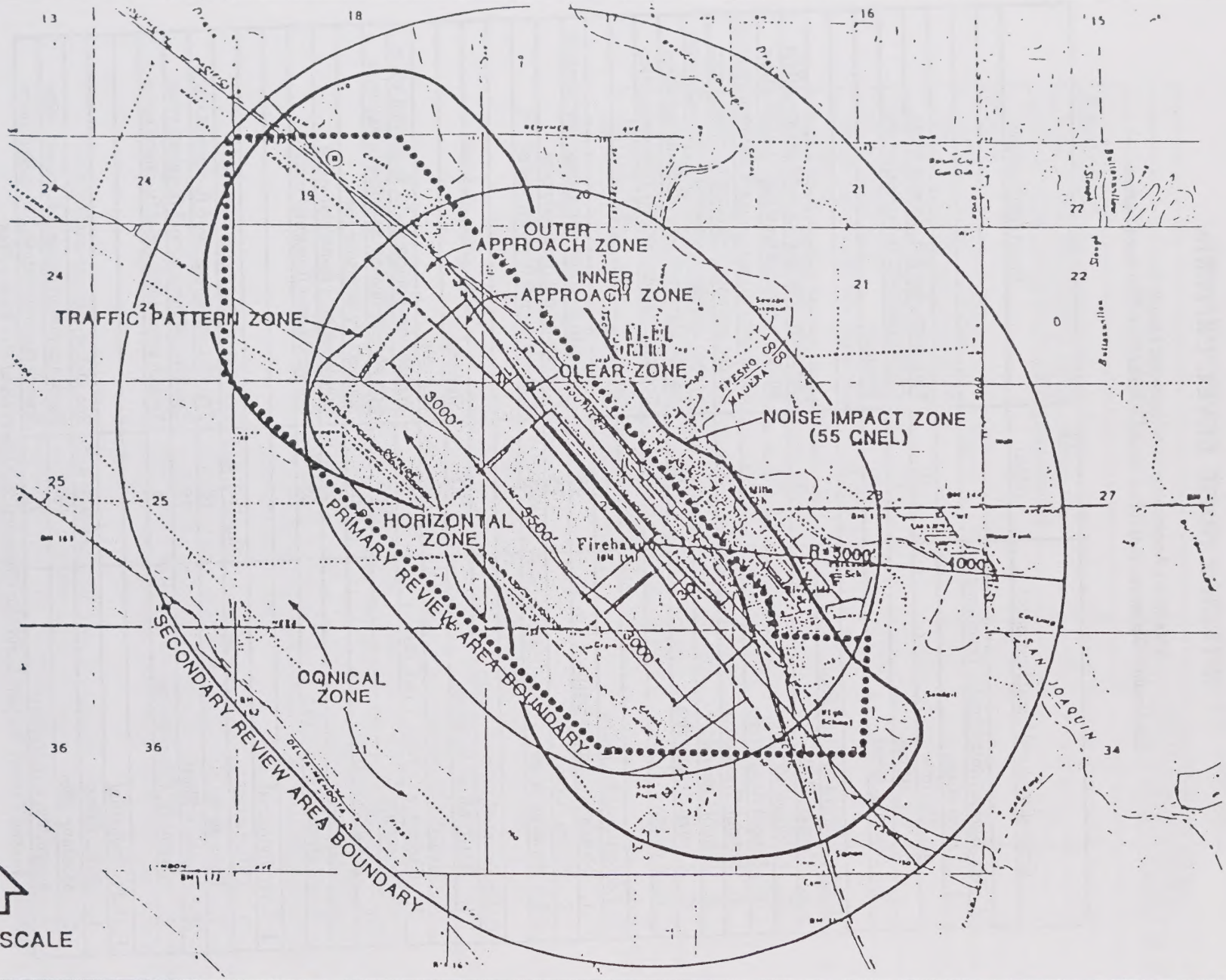
TABLE I-5

INTERIOR NOISE LEVEL CRITERIA

Maximum Acceptable Interior Noise Levels for
Commonly Occurring Individual Noise Events from Exterior Sources

Generalized Land Use (Occupancy)	Acceptable Noise Level (dBA)	Based for Criterion
A. Res. Single/Multi-Family Dwellings		
1. Living Areas		
a. Daytime	60	Conversation - 5 ft.-normal voice
b. Nighttime	55	Conversation-10 ft.-normal voice
2. Sleeping Areas	50	Sleeping
B. Educational Facilities, Etc.		
1. Concert Hall	25	Intrusion of noise may spoil artistic effect
2. Legitimate Theater	30	Intrusion of noise may spoil artistic effect
3. School Auditorium	35	Minimize intrusion into artistic performance
4. School Classroom	55	Speech communication-20 ft.-raised voice
5. School Laboratory	60	Speech communication-50 ft.-normal voice
6. Church Sanctuaries	45	Speech communication-50 ft.-raised voice
7. Library	55	Speech communication-3 ft.-normal voice
C. Recreational Facilities		
1. Motion Picture Theater	45	Minimize intrusion into artistic performance
2. Sports Arena	75	Conversation-2 ft.-raised voice
3. Bowling Alley	75	Conversation-2 ft.-raised voice
D. Commercial, Miscellaneous		
1. Hotel, Motel Sleeping	50	Sleeping
2. Hospital Sleeping	50	Sleeping
3. Executive Offices, Conf. Rooms	55	Speech communication-12 ft.-normal voice
4. Staff Offices	60	Speech communication-6 ft.-normal voice
5. Sales, Secretarial	65	Satisfactory telephone use
6. Restaurants	65	Conversation-4 ft.-normal voice
7. Markets, Retail Stores	65	Conversation-4 ft.-normal voice
E. Light Industrial		
1. Office Areas	See D-3, 4, 5	See D-3, 4, 5
2. Laboratory	60	Speech communication-6 ft.-normal voice
3. Machine Shop	75	Speech communication-3 ft.-raised voice
4. Assembly, Construction	75	Speech communication-2 ft.-raised voice
F. Heavy Industrial		
1. Office Areas	See D-3, 4, 5	See D-3, 4, 5
2. Machine Shop	75	Speech communication-3 ft.-raised voice
3. Assembly, Construction	75	Speech communication-2 ft.-raised voice

Source: Fresno County Airport Land Use Commission *Airport Land Use Policy Plan*



SOURCE:
FRESNO COUNTY
AIRPORT LAND USE
POLICY PLAN

FIREBAUGH MUNICIPAL AIRPORT
REVIEW AREA BOUNDARIES

FIGURE I-11

TABLE I-6

AIRPORT/LAND USE SAFETY COMPATIBILITY CRITERIA

Land Use Characteristic	Safety Zones[1]			
	Clear Zones & Runway Zones	Inner Approach Zones[2]	Outer Approach Zones & Traffic Pattern Zone	Horizontal & Conical Zones
Residential Uses	-	(A, F)	(B, F)	+
Other Uses in Structures	-	(C, E, F)	(E, F)	+
Other Uses Not in Structures	(C, G)	(D)	+	+
Special Characteristics				
Distracting Lights or Glare	-	-	-	(G)
Sources of Smoke or Electronic Interference	-	-	-	(G)
Attractor of Birds	-	-	-	+

[1]See Figure I-11 for location of zones at each airport
[2]The inner approach zone extends to the point below where the approach surface intersects the horizontal surface.

INTERPRETATION

+ ACCEPTABLE — Use is acceptable with little or no risks

( ) CONDITIONALLY ACCEPTABLE — Risks exist, but use is acceptable under conditions cited below:

A. Density no greater than 1 dwelling unit per 3 acres
B. Density no greater than 4 dwelling units per acre
C. No uses attracting more than 10 persons per acre
D. No uses attracting more than 25 persons per acre
E. No schools, hospitals, nursing homes, or similar uses
F. At least 20% of area open (having a size and shape such that a small aircraft could conceivable make an emergency landing without damage to buildings or serious injury to aircraft occupants)
G. Characteristic cannot reasonably be avoided or located outside the indicated safety zone

- UNACCEPTABLE — Use is unacceptable due to associated high risks

Source: Fresno County Airport Land Use Commission *Airport Land Use Policy Plan*

(a) The cancellation is consistent with the purposes of the Williamson Act. In order to make this finding the Board shall make all of the following findings:

(1) The cancellation is for land on which a Notice of Nonrenewal has been served pursuant to Section 51245 of the Government Code;

(2) The cancellation is not likely to result in the removal of adjacent lands from agricultural use;

(3) The cancellation is for an alternative use which is consistent with the applicable provisions of the County or City General Plan;

(4) The cancellation will not result in discontiguous patterns of urban development;

(5) There is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

(b) The cancellation is in the public interest. In order to make this finding, the Board shall make all of the following findings:

(1) Other public concerns substantially outweigh the objectives of the Williamson Act;

(2) There is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

If a cancellation is approved, the property owner is required to pay a cancellation fee of 12 1/2 percent of the fair market value of the land as determined by the Fresno County Assessor.

In the past, each city had the right to protest the establishment of a Williamson Act Contract for property within one-half mile of its boundaries. If a protest was filed and upheld by LAFCO, when the property was annexed the city could refuse to succeed to the Williamson Act Contract. In this case, the Williamson Act contract would be null and void upon completion of the annexation. When the earliest Williamson Act legislation was adopted, these provisions were not included. Instead, provisions were included which allowed the contract on any property within one mile of the city's boundaries at the time it went under

contract to became null and void at the time of annexation if the city did not succeed to the contract.

When Williamson Act Contracts become null and void at the time of annexation, there is no tax penalty.

Land under Williamson Act Contracts within Firebaugh's SOI is shown on Figure I-12.

11. CONCERNED REGULATORY AGENCIES

A number of agencies have varying levels of regulatory control over land use decisions in Firebaugh. The agencies and their authority are discussed in the following subsections.

a. The San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District is responsible for granting two types of permits which pertain to land use: Authority to Construct and Permit to Operate. Any use which has the potential to emit pollutants from a stationary source into the atmosphere is subject to obtaining the first permit prior to construction of a new facility or modification of an existing facility. The second permit ensures that the operation of a facility will be in compliance with the conditions attached to the Authority to Construct permit. The Permit to Operate must be renewed periodically and thereby an ongoing monitoring process is created.

b. Fresno County Congestion Management Agency

The Fresno County Council of Governments has been formally designated as the Congestion Management Agency (CMA) by Fresno County and all fifteen cities within the County. The CMA is required to develop and annually update a Congestion Management Program containing six elements: identification of a system of state highways and principal arterials as the basis for development of the Congestion Management Program; a highway level of service element; a transit standards element; a travel demand management/trip reduction element; a program to analyze the impacts of local land use decisions on the regional transportation system; and a seven-year capital improvement program containing projects intended to further the objectives of the Congestion Management Program. State Highway 33, which passes through Firebaugh, has been identified as a part of the system of state highways and principal arterials, and, therefore, Firebaugh is subject to the requirements which are set forth in the *Fresno County Congestion Management Plan.*

c. The Lower San Joaquin Levee District

The Lower San Joaquin Levee District maintains the levees along both sides of the San Joaquin River through Firebaugh and to its north and south.

d. The California Reclamation Board

The California Reclamation Board maintains jurisdiction over all Federal Flood Control Projects and levees which are either part of such projects or which may affect such projects. The Reclamation Board is authorized to grant encroachment permits for any activity proposed along or near flood control levees, including changes in land use, construction, earthwork, or removal of vegetation.

e. The California Department of Fish and Game

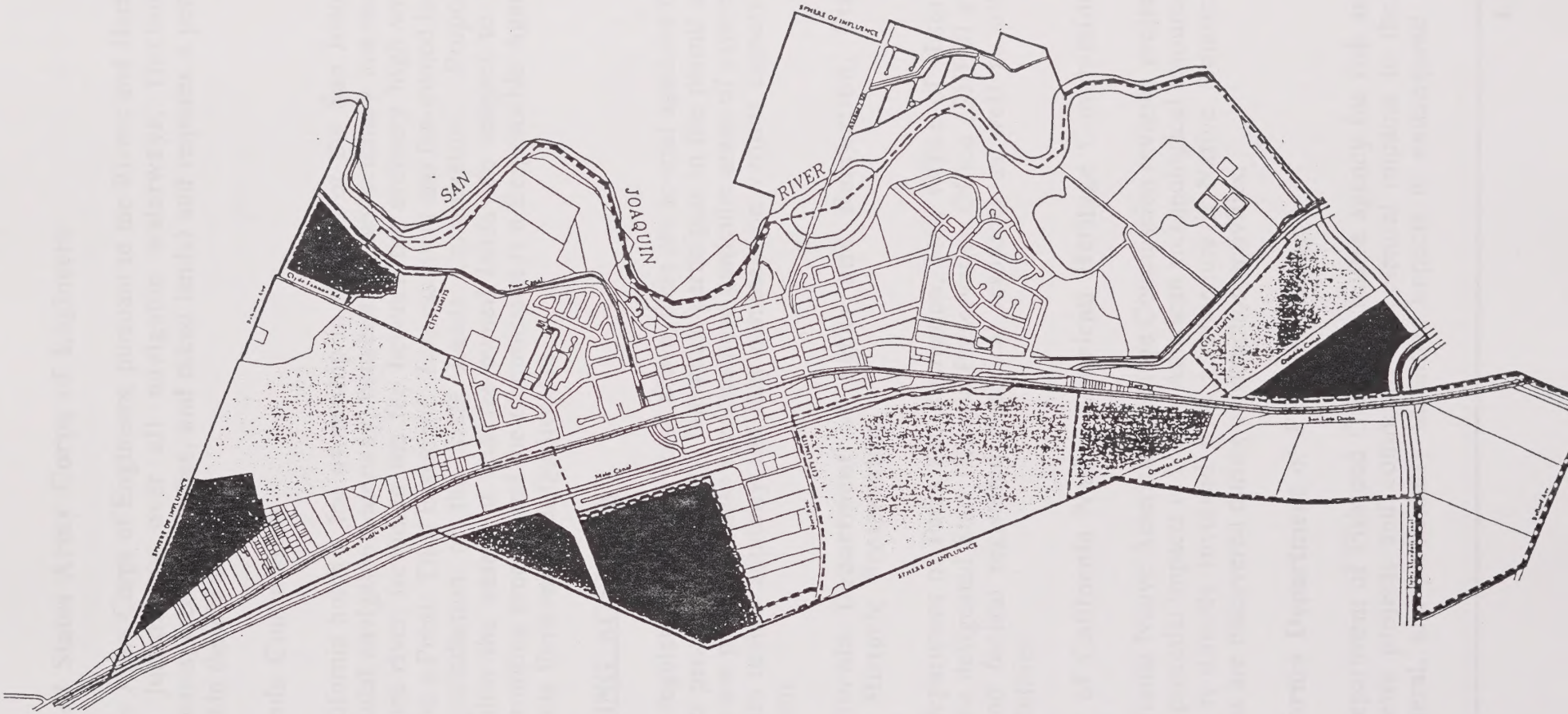
The California Department of Fish and Game has jurisdiction over all "waters of the state" including any lakes, streams, or rivers containing fish or wildlife resources. In Firebaugh's vicinity, the Department has jurisdiction over the San Joaquin River. The Department has authority over two permitting processes: Streambed Alteration Agreements and Suction Dredging Permits. A Streambed Alteration Agreement would be required for any project which would alter the flow of the San Joaquin River. The Suction Dredging Permit would be required for any project which involves suction or vacuum dredging activities in the river.

f. The Central Valley Regional Water Quality Control Board

The Central Valley Regional Water Quality Control Board (RWQCB) has jurisdiction over discharges into the San Joaquin River and into all canals in the Firebaugh area. It also regulates discharges to groundwater. Any project that discharges wastes into any surface water such as the San Joaquin River, local canals, or Joallan Lake must obtain waste discharge requirements from the RWQCB. These requirements serve as the Federal National Pollutant Discharge Elimination System Permit.

g. The California Department of Transportation

The California Department of Transportation (Caltrans) has authority over all state highway and freeway rights-of-way, including easements and undeveloped rights-of-way. In Firebaugh, Caltrans has authority over Highway 33 (N Street in Firebaugh, Dos Palos Road along the Del Rio frontage).



Williamson Act
Contracted Land

Figure I-12

h. The United States Army Corps of Engineers

The United States Army Corps of Engineers, pursuant to the Rivers and Harbors Act, maintains jurisdiction over all navigable waterways, (including nonnavigable streams, creeks, marshes, and diked lands) and requires a permit for any work within these waterways.

i. State Lands Commission

The State of California holds a fee ownership in the bed of the San Joaquin River, as a non-tidal navigable waterway, between the two ordinary low-water marks. The entire river, including the fee between the ordinary high-water marks, is subject to a Public Trust Easement. This easement and fee-owned lands are under the jurisdiction of the State Lands Commission. Proposed development within the easement and fee-owned lands are subject to the Commission's permitting process and the Commission is a Responsible Agency under the California Environmental Quality Act.

12. REVIEWING AGENCIES

In addition to the regulatory agencies noted above, there are several agencies that do not have direct permitting authority, but which participate in the permit and environmental review process. These agencies have particular areas of expertise or maintain certain review authority and may comment on various aspects of project development.

a. The California Department of Parks and Recreation, State Office of Historic Preservation

The California Department of Parks and Recreation, State Office of Historic Preservation, is the designated State Historic Preservation Office (SHPO) and monitors state and federal registered historical resources as well as other statutory responsibilities.

b. The State of California Native American Heritage Commission

The State of California Native American Heritage Commission reviews projects and comments on potential impacts to Native American archaeological resources. The Commission is directly involved with a procedure if Native American artifacts or remains are discovered during construction activities.

c. The California Department of Fish and Game

The California Department of Fish and Game is a trustee agency for fish and wildlife. It reviews projects and comments on potential impacts to these resources, in general, and particularly identifies impacts to endangered or

threatened plant or animal species under the California Endangered Species Act. The Department is required to prepare a written finding indicating whether a proposed project would "jeopardize" the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat essential to the continued existence of the species. If the Department makes this "jeopardy" finding, it is then required to develop "reasonable and prudent alternatives" to conserve the endangered or threatened species.

d. The California State Clearinghouse

The California State Clearinghouse, within the Office of Permit Assistance, is the point of contact for review of environmental documents where one or more state agencies will be a responsible or trustee agency. It is the Clearinghouse's responsibility to circulate environmental documents among state agencies, to coordinate review among the agencies, and to forward the comments from the agencies to the lead agency.

e. The United States Bureau of Reclamation

The United States Bureau of Reclamation maintains authority over federal water project facilities, including the Federal Flood Control Project Levees and also reviews development projects for potential effects to these facilities.

There are several federal agencies which might also have review authority if the Army Corps of Engineers issued a permit for development along the San Joaquin River, in the Firebaugh planning area. These include the United States Environmental Protection Agency, the United States Fish and Wildlife Service, and the National Marine Fisheries Service.

13. FINDINGS

- The *Firebaugh General Plan* has been the official development guide for the City of Firebaugh for 28 years. The existing plan is outdated and no longer provides adequately for growth and development in the City.

- A comparison of the City's zoning map with the general plan map reveals that there are no notable inconsistencies between them.

- About 22.6 percent of the City's incorporated land is zoned for residential uses, 29.4 percent for industrial uses, and 5.5 percent for commercial uses.

- Almost 50 percent of the land in the SOI is devoted to agricultural uses. For non-agricultural land, 18.2 percent is devoted to residential uses, 11.3 percent for public and private institutional uses (schools, parks,

churches), 17.5 percent for open space, 6.4 percent for industrial uses, 1.1 percent for commercial uses, and 10.4 percent is vacant.

- There is a limited amount of vacant land suitable for residential development within the City boundaries.

- The *Fresno County General Plan* provides for agricultural use throughout most of the unincorporated SOI. Development applications on land within one-half mile of the City are referred to the City for annexation.

- Almost all of the unincorporated SOI is zoned for agricultural use under the *Fresno County Zoning Ordinance*.

- Most unincorporated land within the City's SOI is under Williamson Act Contract. Most of the land located in the northern portion of the SOI was protested and the City need not succeed to the contract when the property is annexed.

- The Firebaugh Municipal Airport is located in the western portion of the City. Future development in this area may be restricted by safety, noise, and height limitations.

- A number of agencies have regulatory authority or responsibility to review actions in the planning area.

SOURCES CONSULTED

Austin, Glenda, Assistant City Manager, City of Firebaugh. Personal and Telephone Interviews. 1991.

Consultive Planners. *Firebaugh General Plan.* 1973.

Consultive Planners. *Firebaugh Housing Element.* 1981.

Consultive Planners. *Firebaugh Housing Element.* 1985.

Consultive Planners. *General Plan Supplement.* 1978.

Durham, Keyth, City Manager, City of Firebaugh. Personal and Telephone Interviews. 1991.

Envicom Corporation. *Five County Seismic Safety Element - for the General Plans of Fresno, Kings, Madera, Mariposa and Tulare Counties.* 1974.

Environ. *Fresno County Hazardous Waste Management Plan.* 1988.

Firebaugh, City of. *1962 General Plan.* 1962.

Firebaugh, City of. *Firebaugh Zoning Ordinance.* 1979.

Fresno County Airport Land Use Commission. *Fresno County Airport Land Use Management Plan. 1983.*

Fresno, County of. *Del Rio Specific Plan.* 1989.

Fresno, County of. *Fresno County Firebaugh Community Plan.* 1965, amended 1989.

Fresno, County of. *Fresno County General Plan.* 1976.

Fresno, County of. *Fresno County Zoning Ordinance.*

Local Agency Formation Commission. *Cortese-Knox Local Government Reorganization Act Procedures Guidelines.* 1987.

Panter, Marvin, Executive Officer, Local Agency Formation Commission. Telephone Interview. 1991.

Perkins, Richard. Fresno County, Telephone Interview. 1991.

Rabe, Fred, City Engineer, City of Firebaugh. Personal and Telephone Interviews. 1991.

POPULATION

1. INTRODUCTION

The general plan, through its land use planning and policies and its housing element must accommodate the projected population of a city through the 20-year planning period. Further, the general plan must take into account and provide for the public facilities and services which will be necessary to support the projected population. A thorough understanding of the existing and projected population of the city, therefore, is essential to the development of the general plan. Historical population growth, current population demographics, and population projections for the City of Firebaugh are described in this section.

2. HISTORICAL POPULATION GROWTH

Firebaugh's population growth during the past ten years is shown on Table II-1 and Graph II-1. As shown, the population increased from 3,740 in 1980 to 4,770 in 1991. The most dramatic population growth occurred very recently, with an increase of slightly over 13 percent between 1990 and 1991. This rate far exceeded the County-wide and state-wide growth percentages for the same year. Prior to 1990, Firebaugh's population grew sporadically, with substantial growth occurring in some years and a minor decline in population occurring in other years.

The dramatic increase in population in 1990 was due primarily to two factors: the completion of a 120-unit low- and moderate-income housing complex and the partial completion of a large, new subdivision in the City.

3. POPULATION CHARACTERISTICS

a. Age Distribution

Age structure is a particularly important planning consideration because different age segments of the population require different kinds of services. A young population will likely demand more opportunities for active recreation and school services, whereas an older population will likely call for more passive recreational services and may need more medical services and assistance with transportation. Different age groups also require different consideration when it comes to housing. An older population will generally have less need for the type of large housing units that a population with a large number of residents of child-bearing age will need. Table II-2 shows the age distribution of

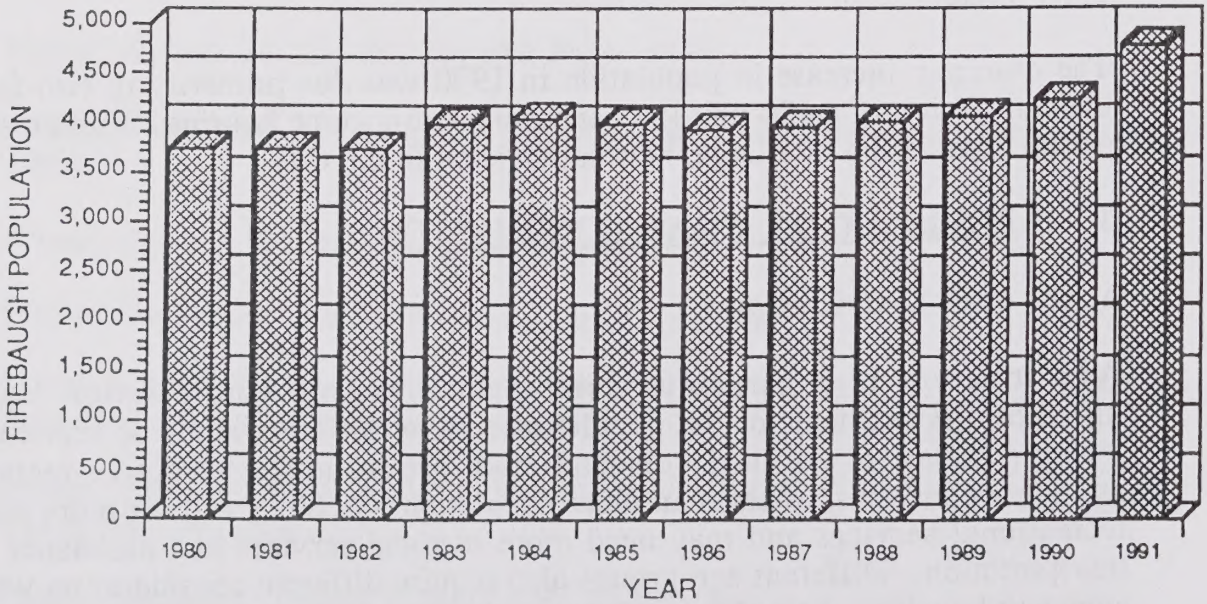
TABLE II-1

POPULATION GROWTH
FIREBAUGH, FRESNO COUNTY, CALIFORNIA
1980-1991

Year	Firebaugh Total	Annual Growth	Fresno County Total	Annual Growth	California Total	Annual Growth
1980	3,740		514,621		23,668,145	
1981	3,723	-0.45%	522,023	1.44%	24,015,000	1.47%
1982	3,748	0.67%	532,866	2.08%	24,532,000	2.15%
1983	3,979	6.16%	544,731	2.23%	25,052,000	2.12%
1984	4,026	1.18%	558,082	2.45%	25,555,000	2.01%
1985	3,993	-0.82%	570,145	2.16%	26,072,000	2.02%
1986	3,935	-1.45%	579,622	1.66%	26,693,000	2.38%
1987	3,945	0.25%	591,098	1.98%	27,331,000	2.39%
1988	3,995	1.27%	606,697	2.64%	27,995,000	2.43%
1989	4,073	1.95%	625,246	3.06%	28,701,000	2.52%
1990	4,219	3.58%	646,796	3.45%	29,558,000	2.99%
1991	4,770	13.06%	686,800	6.18%	30,351,000	2.68%

GRAPH II-1

POPULATION GROWTH
FIREBAUGH, FRESNO COUNTY, CALIFORNIA
1980-1991



Sources: U. S. Census (1980, 1990); State Department of Finance (1981-1989, 1991)

Firebaugh's population in 1990. Almost 40 percent of Firebaugh's population was under 18 years old, compared with 31 percent for the County and only 26 percent for the state.

TABLE II-2

AGE DISTRIBUTION
FIREBAUGH, FRESNO COUNTY, CALIFORNIA
1990

	Firebaugh		Fresno County		California	
Age Group	Total	% of Total	Total	% of Total	Total	% of Total
Under 18	1,754	39.6	209,036	31.3	7,750,725	26.1
18-24	503	11.4	75,168	11.3	3,412,257	11.5
25-54	1,621	36.6	266,714	40.0	13,228,261	44.4
54-59	138	3.1	23,519	3.5	1,133,907	3.8
60+	413	9.3	93,053	13.9	4,234,871	14.2
Total	4,429	100.0	667,490	100.0	29,760,021	100.0

Source: U. S Census, 1990

b. Racial and Ethnic Composition

Table II-3 shows the ethnic breakdown of the population of Firebaugh, Fresno County, and California in 1990.

TABLE II-3

ETHNIC COMPOSITION
FIREBAUGH, FRESNO COUNTY, CALIFORNIA
1990

	Firebaugh		Fresno County		State of California	
	Total	% of Total	Total	% of Total	Total	% of Total
White	743	16.8	338,595	50.7	17,029,126	57.3
Black	63	1.4	31,311	4.7	2,092,446	7.0
Am. Indian[1]	18	0.4	5,070	0.8	184,065	0.6
Asian[2]	19	0.4	54,110	8.1	2,710,353	9.1
Hispanic[3]	3,573	80.7	236,634	35.5	7,687,938	25.8
Other	131	0.3	1,170	0.2	56,093	0.2

[1]Includes Eskimos and Aleuts
[2]Includes Pacific Islanders
[3]Persons of Spanish origin are deducted from each race category and shown separately as Hispanic
Source: U. S Census, 1990

As Table II-3 shows, Firebaugh's population was significantly different than that of Fresno County and the state. Firebaugh's population was almost 81 percent Hispanic, compared with only 35.5 percent for Fresno County and 25.8 percent for the state.

c. Household and Family Composition

Table II-4 shows a breakdown of family composition according to the 1990 Census for Firebaugh. As the table indicates, Firebaugh had a higher percentage of married couples with children than did either Fresno County or the state. The City has a lower rate of one- person households, both male and female, compared to the County and the state. The City also has a slightly lower rate of female-headed households with children than does the County or the state.

TABLE II-4

HOUSEHOLD COMPOSITION
FIREBAUGH, FRESNO COUNTY, CALIFORNIA
1990

	Firebaugh		Fresno County		California	
Household	Total	% of Total	Total	% of Total	Total	% of Total
One-Person Households:						
Male Householder	68	5.74	18,723	8.47	1,070,030	10.30
Female Householder	85	7.17	27,563	12.48	1,359,837	13.09
Two-or-More-Person Households:						
Married couple w/children	499	42.11	64,966	29.41	2,799,452	26.95
Married couple w/o children	231	19.49	55,247	25.01	2,678,070	25.78
Single Male w/children	63	5.32	6,440	2.91	252,314	2.43
Single Male w/o children	32	2.70	4,332	1.96	225,378	2.17
Single female w/children	133	11.22	22,558	10.21	784,315	7.55
Single Female w/o children	34	2.87	8,238	3.73	407,865	3.93
Non-Family Households	40	3.38	12,866	5.82	811,945	7.82

Source: U.S. Census, 1990

d. Place of Residence

The 1980 census indicates that the population of Firebaugh is very stable, with many long-term residents (see Table II-5). (The 1990 census data for place of residence in not yet available.) In 1980, 55.3 percent of the population had lived in the same house for five or more years. This compares with only 47.4 percent for Fresno County.

TABLE II-5

RESIDENTIAL PATTERNS
1980

	Firebaugh[1]		Fresno County	
Place of Residence	Total	% of Total	Total	% of Total
Same House	2,277	55.3	223,563	47.4
Different House, but in the U.S.	1,628	39.5	236,899	50.2
Central City of MSA[2]	129	3.1	93,393	20.0
Remainder of MSA	1,026	24.9	66,155	14.0
Outside MSA	473	11.5	77,351	16.4
Different MSA	49	1.2	60,856	12.9
Not in an MSA	424	10.3	16,495	3.5
Abroad	212	5.2	11,366	2.4
Total[3]	4,117	100.0	471,828	100.0

[1]Data is for census tract in which Firebaugh is located and includes persons living outside the City boundaries.
[2]Metropolitan Statistical Area
[3]Total consists of Same House; Different House, but in U.S.; and Abroad
Source: U.S. Census, 1980

4. POPULATION PROJECTIONS

Population projections are a significant factor in almost all planning activities. Effective planning can take place only to the extent that growth and development in a community can be anticipated. The only recent population projection for Firebaugh was a short-range (five-year) projection prepared by the Fresno County Council of Governments (COG) and used for determining Firebaugh's Regional Housing Share for the *1991 Housing Element Update*. This projection was prepared in 1989 and projected population through the year 2000. The COG projection projected Firebaugh's population in the year 2000 to be 4,146. Due to an unanticipated spurt in development activity, this population was exceeded by 1990.

Recent population growth in Firebaugh was shown on Table II-1. Population growth as shown by the census for the years 1960, 1970, 1980, and 1990 is shown on Table II-6 and Graph II-2. The highest annual rate of growth as shown on Table II-1 was between 1990 and 1991, when the City grew 13.1 percent. During the entire 1980s, however, the City grew at an annual rate of only about two percent per year. Table II-6 indicates that Firebaugh grew at varying rates in the intervals between each census. The highest rate was in the 1970s when the City grew at a rate of almost five percent a year. Part of this growth, however, was due to the annexation of inhabited areas, rather than being the result of new development in the City. Overall, during the entire 30-year period between 1960 and 1990, the City grew at an average annual rate of 3.8 percent.

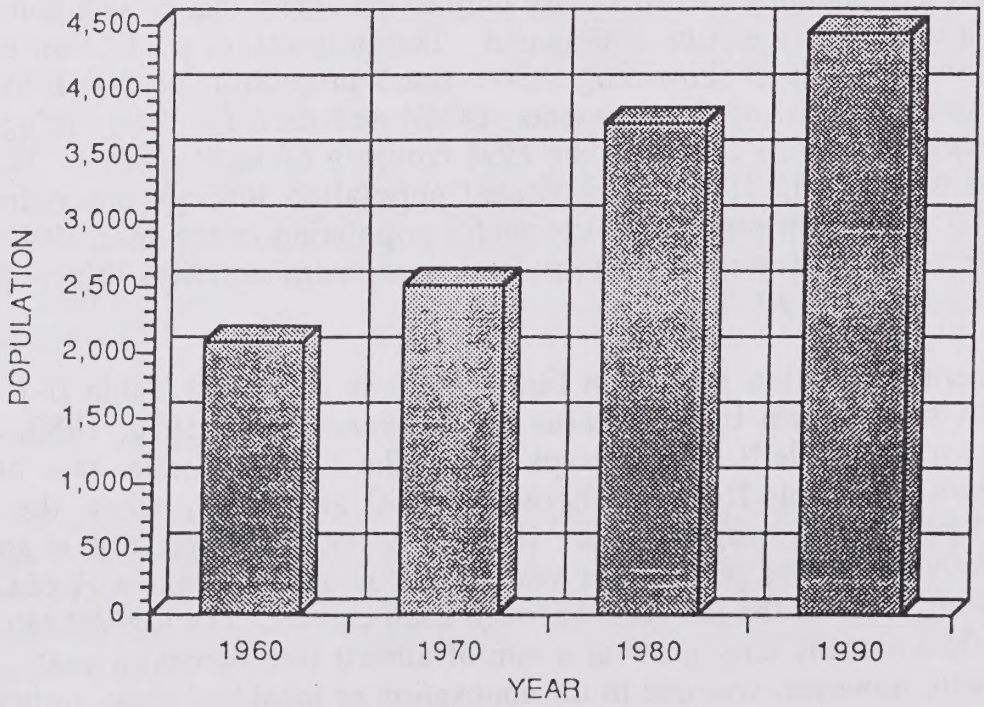
TABLE II-6

HISTORICAL POPULATION DATA
U. S. CENSUS
CITY OF FIREBAUGH

Year	Population	Ten-Year Growth Rate	Annual Growth Rate
1960	2,070	-	-
1970	2,517	21.6	2.2
1980	3,740	37.8	3.8
1990	4,429	18.4	1.8

GRAPH II-2

HISTORICAL POPULATION DATA
U. S. CENSUS
CITY OF FIREBAUGH



Source: U. S. Census, 1990

Table II-7 and Graph II-3 present three population projections based on historical data. The first, referred to as the low projection, is based on the 30-year average growth, which was 79 persons annually. The second, referred to as the medium projection, is based on the 1970 to 1990 20-year average growth of 96 persons per year. The final projection, referred to as the high projection, is based on the highest annual rate of growth during the ten-year period, 1970-1980, or 122 persons per year.

5. FINDINGS

- Firebaugh's 1991 population was 4,770.

- Firebaugh experienced its most dramatic growth in 1990-1991, when it grew over 13 percent.

- Firebaugh has a relatively young population. Whereas 37 percent of Firebaugh's population was under 18, only 30 percent of the County's and 27 percent of the state's were under 18.

- The majority of Firebaugh's residents are of Hispanic origin. Almost 81 percent of Firebaugh is of Hispanic origin, compared with Fresno County's 35.5 percent and the State of California's 25.8 percent.

- Firebaugh has grown at substantially different rates over the past 30 years, depending upon what time frame is used as a reference. Three population projections have been prepared using three scenarios, based on historical growth rates. The medium projection indicates that Firebaugh will grow from 4,770 in 1991 to 6,690 by the year 2011.

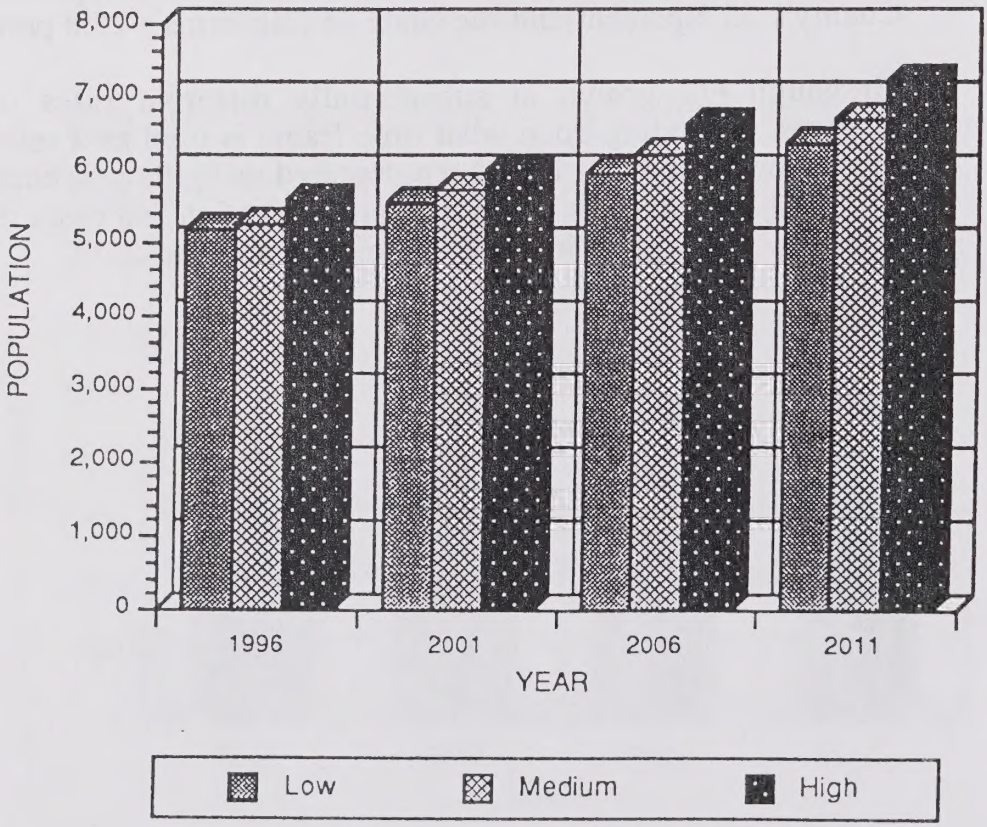
TABLE II-7

POPULATION PROJECTIONS
CITY OF FIREBAUGH

Year	Low	Medium	High
1996	5,165	5,250	5,580
2001	5,560	5,730	5,990
2006	5,955	6,210	6,600
2011	6,350	6,690	7,210

GRAPH II-3

POPULATION PROJECTIONS
CITY OF FIREBAUGH



Source: Michael Paoli and Associates

SOURCES CONSULTED

California Department of Finance, Summary Report: Controlled County Population Estimates for Fresno County, 1981 to 1990.

City of Firebaugh, 1991 Housing Element.

U. S. Bureau of the Census, Summary Tape File 1 (STF 1), 1990, Firebaugh.

U. S. Bureau of the Census, Summary Tape Files 1 and 3 (STF 1 & 3), 1980, Firebaugh.

ECONOMIC CONDITIONS AND FISCAL CONSIDERATIONS

1. INTRODUCTION

The economic conditions and fiscal considerations of the City provide the foundation upon which the future growth of the City depends. As the economic and fiscal health of a community wavers or becomes stronger, so does the potential for new industrial, commercial, and residential development. To effectively plan, therefore, the City must take into consideration its economic conditions and fiscal considerations. This section reviews historical and current economic and fiscal data for Firebaugh.

2. ECONOMIC CONDITIONS

a. Economic and Employment Characteristics

The most recent data available which describes Firebaugh's employment characteristics is from the 1980 census. The 1990 census data related to employment characteristics will not be available until mid-1992. Employment trends for Firebaugh based on the 1980 census are presented in Table III-1. As shown by the Table III-1, the major source of employment was agriculture, with wholesale and retail trade, manufacturing, and education services being the next four major employment categories. Much of the employment in the manufacturing and wholesale trade categories is also related to agriculture. The most important agricultural products produced in the Firebaugh area are cotton, melons, tomatoes, and rice.

b. Residential Development

Firebaugh grew at a very slow rate through most of the 1980s, even losing population in three separate years. Near the end of the decade, however, a 120-unit, affordable housing, multiple family complex was developed in the City and a 104-lot single family subdivision was partially completed. Between 1990 and 1991, the City's population grew by 551 persons (over 13 percent) as a result of these two projects. During the entire decade, however, the growth rate averaged only two percent. Growth occurred in the newly developing north end of the City, with some in-fill development also occurring in the south end.

Currently, there are about 129 acres of land available for residential development within the City limits. This acreage includes one 44-acre site which

TABLE III-1

1980 FIREBAUGH EMPLOYMENT BY INDUSTRY*

Industry	City of Firebaugh	%	Fresno County	%
Agriculture	515	43.0	24,627	11.8
Construction	10	0.8	12,391	5.9
Manufacturing	92	7.7	24,400	11.6
Transportation	36	3.0	7,981	3.8
Communications and Utilities	20	1.8	5,786	2.8
Wholesale Trade	156	6.3	11,362	5.4
Retail Trade	156	13.0	34,874	16.6
Finance (Insurance) and Real Estate	40	3.3	13,683	6.5
Business/Repair Services	29	2.4	8,588	4.1
Recreation/Entertainment Services	43	3.6	7,821	3.7
Health Services	12	1.0	14,981	7.2
Education Services	95	7.9	19,669	9.5
Other Professional Services	20	1.7	9,480	4.5
Public Administration	54	4.5	13,929	6.6
Total Employed	1,197	100.0	209,572	100.0

*Employed persons 18 years of age and older

Source: U.S. Bureau of Census, 1980

has all the infrastructure for 189 single family lots and one 10-acre multiple family lot in place. There are only three or four in-fill lots remaining in the developed portion of the City. There is additional land available for residential development at both the north and south ends of the City. Development of the land, however, will require annexation.

c. Commercial Development

The City of Firebaugh is an agricultural service center. Many of the existing businesses are service oriented, rather than retail oriented. Because local citizens can easily commute to Madera and Fresno, where selection is better and prices more competitive, specialty shops and retail outlets find it difficult to survive. Stores and shops which provide services and convenience goods tend to be the most successful.

Taxable retail sales for Firebaugh from 1970 to 1990 are shown on Table III-2. Taxable sales increased from only $8,142,000 in 1970, to $31,257,000 in 1980, and to $42,844,000 in 1990. As shown on the Table III-3, taxable retail sales have increased along with the population. In 1970, the per capita retail sales in Firebaugh was $3,235. By 1980, the per capita sales increased to $8,357, and by 1990, to $10,115.

While it appears that taxable retail sales were growing at a high rate, particularly during the 1970s, there was also an extremely high inflation rate during this period. Thus, while the amount of taxable sales certainly increased, the picture is distorted. Table III-2 also shows that during periods of recession, taxable sales decrease severely. Sales dropped over 12 percent in 1977, almost 19 percent in 1982, almost 17 percent in 1985, and almost 11 percent in 1986. Starting in 1987, retails sales picked up and between 1989 and 1990 increased by 33 percent. The overall increase in taxable sales between 1970 and 1990 was 426 percent, while between 1980 and 1990, it was only 37 percent.

It is also interesting to note that there has not been an increase in the number of retail sales permits in the City between 1970 and 1990. In both years, there were 101 retail sales permits. During the intervening years, the number of permits fluctuated between a low of 96 (in 1972, 1973 and, 1976) to a high of 118 (in 1982). It does not appear that the larger population has supported a greater variety of retail businesses in the City.

Within the Firebaugh city limits, there are almost no large undeveloped parcels zoned for general commercial use. There are several small undeveloped parcels, several underutilized parcels, and several parcels which are developed with residential uses rather than commercial uses, and a few vacant buildings which could provide space for new general commercial development. There are, however, about twenty vacant acres available for service commercial use.

TABLE III-2

RETAIL SALES

Year	Number of retail permits	Retail Sales	Percent Change
1970	101	$8,142,000	-
1971	102	$8,701,000	6.9
1972	96	$10,189,000	17.1
1973	96	$16,109,000	58.1
1974	101	$21,080,000	30.9
1975	103	$22,383,000	6.2
1976	96	$25,838,000	15.4
1977	102	$22,656,000	-12.3
1978	103	$25,701,000	13.4
1979	102	$29,056,000	13.1
1980	102	$31,257,000	7.6
1981	114	$34,411,000	10.1
1982	118	$27,979,000	-18.7
1983	111	$28,952,000	3.4
1984	111	$33,259,000	14.9
1985	105	$27,648,000	-16.9
1986	109	$24,681,000	-10.7
1987	108	$25,496,000	3.3
1988	108	$29,218,000	14.6
1989	103	$32,141,000	10.0
1990	101	$44,844,000	33.3

Source: State Board of Equalization

TABLE III-3

RETAIL SALES PER CAPITA
FIREBAUGH

Year	Retail Sales	Population	Sales Per Capita
1980	$31,257,000	3,740	$8,357
1981	$34,411,000	3,723	$9,243
1982	$27,979,000	3,748	$7,465
1983	$28,952,000	3,979	$7,276
1984	$33,259,000	4,026	$8,261
1985	$27,648,000	3,993	$6,924
1986	$24,681,000	3,935	$6,272
1987	$25,496,000	3,945	$6,463
1988	$29,218,000	3,995	$7,314
1989	$32,141,000	4,073	$7,891
1990	$42,844,000	4,219	$10,155

Source: State Board of Equalization; Michael Paoli and Associates

d. Industrial Development

As shown in Table III-4, Toma-Tek, with almost 350 employees, and Telles Ranch, with 250 employees in the main season, are Firebaugh's major employers. Toma-Tek is a tomato processing plant and Telles Ranch produces a variety of agricultural commodities. Other large employers include the Firebaugh-Las Deltas Unified School District, with 166 employees and N. F. Davis, with 83 employees.

TABLE III-4

MAJOR EMPLOYERS IN FIREBAUGH

Employers	Permanent Employees	Seasonal Employees	Product
Toma-Tek	20-25	319	Tomato paste
Telles Ranch	95	250	Farm products
Thomason Tractor	26	0	Tractors
Firebaugh Equipment	24	1	Farm equipment
Levy-Zentner	14	2-100	Growers/packers
Doyle Packing	5	12	Fruit packing
Firebaugh Welding	5	2	Welding
N. F. Davis	33	50	Pack, store, ship ag products
Firebaugh-Las Deltas Unified School District	131	35	Education
City of Firebaugh	24	7	City government

Source: Michael Paoli and Associates, Survey of Industries, 1991

There is substantial undeveloped land zoned for industrial use in Firebaugh. In the southern portion of the City, west of Highway 33, there are 272 undeveloped acres zoned M-2. In the central portion of the City, west of Highway 33, there are about 91 undeveloped acres zoned M-1.

3. FISCAL SETTING

a. Introduction

A variety of services are provided to Firebaugh residents and businesses by the City of Firebaugh. These include legislative and administrative services, police and fire protection, water and sewer services, refuse collection, street maintenance, and parks and recreational services.

The City finances these services through the operating budget's six separate funds, as shown in Table III-5 and discussed in greater detail in the following

sections. Budget allocation by fund is illustrated in Graph III-1. With the exception of the General Fund, the funds are discussed in the following paragraphs. The General Fund finances the City's on-going operations and would be most affected by the general plan update. It is discussed in greater detail later in this chapter.

The base year for the information in this chapter is 1990. This report focuses on the City's budget for fiscal year (FY) 1991-1992.

b. Operating Budget

(1) Introduction

The City finances its on-going operations and services through the operating budget. The operating budget is divided into six categories: General Fund, Special Revenue Grants, Special Revenue Funds, Redevelopment Agency Funds, Water Enterprise Funds, and Assessment Districts. The budgets for fiscal years 1990-1991 and 1991-1992 are shown on Table III-6.

(2) Special Revenue Grants

Special Revenue Grants are funds obtained through special grants or programs and which must be used for specific purposes. In 1991-1992, Firebaugh's special revenue grant fund budget is tied to aviation (for improvements related to the Firebaugh Municipal Airport) and parks. Firebaugh's Community Development Block Grant funds are included in this category.

This fund varies from year to year, depending on what grants, if any, are applied for and received by the City. In FY 1991-1992, the budget is $209,261. The budget for special grant funds dropped by 25.9 percent from FY 1990-1991 to FY 1991-1992.

(3) Special Revenue Funds

This fund is used for capital improvement projects or for expenditures on streets and highways. The revenues come primarily from the state as gas tax or other revenues dedicated to streets and highways.

The FY 1991-1992 budget, $181,061, represents a 5.56 percent increase over the previous year's budget. The rising revenues can be attributed to the growth of the City's population, which increased the City's share of revenues from the state.

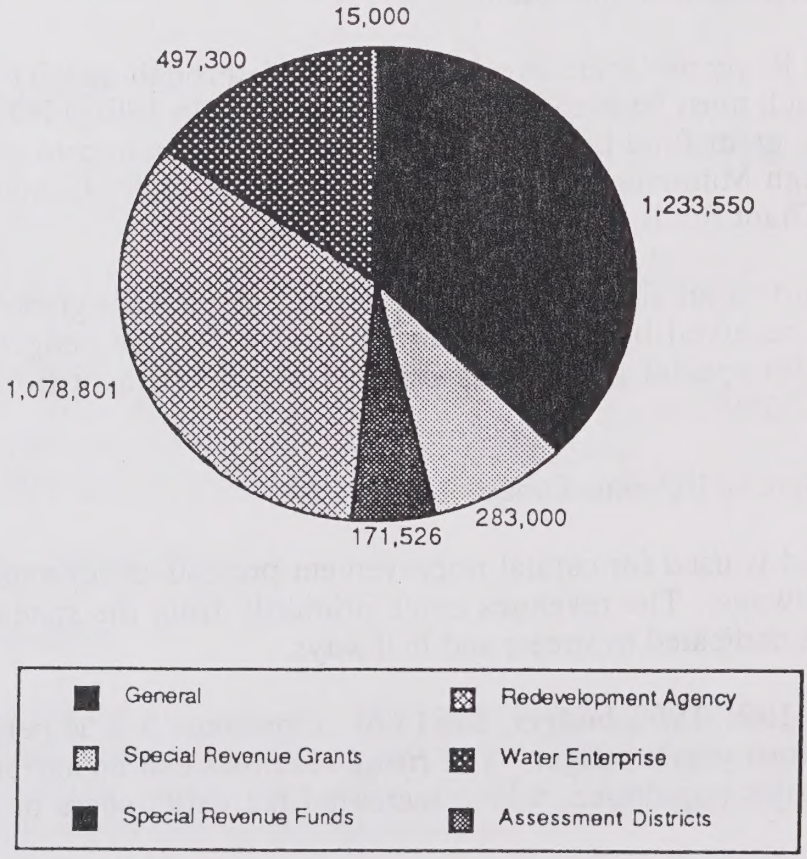
TABLE III-5

FIREBAUGH OPERATING BUDGETS BY FUND

Fund	1990-1991	1991-1992	Percent Change
General	$1,233,550	$1,275,422	3.39
Special Revenue Grants	$283,000	$209,261	-25.93
Special Revenue Funds	$171,526	$181,061	5.56
Redevelopment Agency	$1,078,801	$335,086	-68.87
Water Enterprise	$497,300	$483,012	8.89
Assessment Districts	$15,000	$19,640	30.93

GRAPH III-1

FIREBAUGH OPERATING BUDGETS BY FUND



Source: Firebaugh City Budget, FY 1991-1992

TABLE III-6

FIREBAUGH BUDGET
1991-1992

Expenses	1991-1992	1990-1991	Variance	Percent Change
Parks	$70,472	$52,888	$17,584	33.25
Streets	$9,417	$93,745	-$84,328	-89.95
Senior Citizen	$15,378	$15,775	-$397	-2.52
City Council	$48,565	$45,188	$3,377	7.47
Administration	$215,060	$234,676	-$19,616	-8.36
Health Center	$22,640	$15,616	$7,024	44.948
Police	$602,761	$540,976	$61,785	11.42
Fire	$42,679	$63,467	-$20,788	-32.75
Building and Inspection	$28,951	$29,701	-$750	-2.53
Airport	$22,822	$11,247	$11,575	102.92
Public Works	$121,790	$141,903	-$20,113	-14.17
Planning	$57,987	$52,158	$5,829	11.18
Total Expenses	$1,258,522	$1,297,340	-$38,818	-2.99

Source: Firebaugh City Budget, FY 1991-1992

(4) Redevelopment Funds

Redevelopment funds are used for several projects within the City's redevelopment area. The funds come primarily from tax increments and the sale of bonds.

The FY 1991-1992 budget, $335,086, represents a 68.9 percent decline from the FY 1990-1991 budget. In FY 1990-1991, the budget included $750,000 from the sale of bonds.

(5) Enterprise Funds

These funds are self-supporting and finance water projects in the City. The revenues are generated by user charges and connections fees. Increases in capital costs or operational costs are usually offset through consumer adjustment charges or by increasing the connection fees. The FY 1991-1992 budget is $483,012.

The budget increased by almost 8.9 percent between FY 1990-1991 and FY 1991-1992. The increase occurred because new development is occurring and greater fees are expected to be collected.

(6) Assessment District Funds

Assessment district funds are tied to specific improvements in specific areas of the City and are generated by assessment on properties within the district.

The FY 1991-1992 budget, $19,640, is 30.9 percent over the FY 1990-1991 budget.

c. The General Fund

The General Fund finances a variety of departments and services, including legislative and administrative functions, police and fire protection, public works, parks and recreation, airport, senior citizen activities, and the Firebaugh Community Health Center. In some cases, funds are transferred from the General Fund to the Special Revenue Grants Funds to provide matching grants, etc.

The sources of the General Fund revenues are varied and include property taxes, license and permit fees, fines and forfeits, investment (interest), general taxes, and fees for current services. Firebaugh's General Fund budget was $1,233,550 in 1990-1991 and increased to $1,275,422 in 1991-1992, an increase of 3.39 percent.

The allocation of General Fund revenues by department in 1990-1991 and 1991-1992 are shown on Table III-6.

d. General Fund Expenditures

(1) Parks

Park funds are expended on the maintenance of the City's parks. Expenditures include employee salaries, equipment, supplies, insurance, and utilities. As shown on Table III-6, the allocation for FY 1991-1992 is $70,472, or 5.6 percent of the total General Fund Budget. This is a 33.25 percent increase over the previous fiscal year. Most of the increase in the allocation can be attributed to the need for matching grant funds for park improvements.

The parks department may also receive additional funding through Special Revenue Grants.

(2) Streets

Services funded through the streets account include street maintenance and repairs, tree replacements and care, and streets lights. Expenditures are budgeted for $9,417 in FY 1991-1992, a 89.95 decrease from the previous fiscal year. The street allocation represents only 0.7 percent of the total budget. The streets department also receives funding through special revenue funds.

(3) Senior Citizen

The senior citizen allocation, $15,378, funds a senior citizen building located in a City Park. The funding covers insurance, maintenance, supplies, utilities, and other minor building-related costs. The allocation represents 1.2 percent of the total budget and represents a decline of 2.52 percent from the previous fiscal year.

(4) City Council

These revenues fund various costs associated with the City Council and include insurance, supplies and materials, travel and transportation, registration and tuition, and other minor costs. The FY 1991-1992 allocation, $48,565, represents 3.9 percent of the total year's budget. It is an increase of 7.47 percent over the previous year's allocation.

(5) Administration

Departments funded through administration include the City Administrator, City Attorney, City Treasurer, building maintenance, and City Clerk. As shown in Table III-6, the administration allocation totaled $215,060, or 17.1 of the total budget for the year. The allocation, however, was 8.36 percent less than that of the previous fiscal year.

(6) Health Center

The City owns the Firebaugh Community Health Center and the allocation for this facility is for its maintenance. The 1991-1992 budget allocates $22,640 (1.5 percent of the total year's budget) for this purpose. This represents a 44.6 percent increase over the previous year's allocation.

(7) Police

Firebaugh's police protection services allocations total $602,761 of the FY 1991-1992 budget. At 47.9 percent, this is the largest expenditure allocation in the budget. Allocations for the police department increased 11.42 percent over the previous year. The increased allocation is due to a need for increased staffing.

(8) Fire

Allocation for the fire department in the 1991-1992 budget totaled $42,679, or 3.4 percent of the total year's budget. The allocation represents a 32.75 percent decline over that in the previous year's budget. The FY 1990-1991 had included an allocation for equipment which was not included on the FY 1991-1992 budget.

(9) Building and Inspection

Building and Inspection received an allocation of $28,951 in the 1991-1992 budget. This represents 2.3 percent of the total budget and a minor decline (2.53 percent) from the previous year's budget.

(10) Airport

The airport division allocation for 1991-1992 was $22,822. This represents 1.8 percent of the total budget for the year, and an increase of 102.9 percent over the previous year. The increase in the allocation is due to a transfer of $7,920 to the special revenue grants fund to provide a match for an aviation grant.

(11) Public Works

The public works allocation, $121,790, represents, 9.7 percent of the year's budget. The allocation was 14.17 percent less than that of the previous year. The decline is due to the adjustment of staff between departments, and to not filling an open position in the department.

(12) Planning

Services provided by the planning division include the preparation of a new general plan and the administration of day-to-day planning activities. The 1991-1991 allocation was $57,987, which was 4.6 percent of the total budget for the year. The allocation was 11.18 percent higher than that of the previous year.

e. General Fund Revenues

(1) Introduction

Sources of general fund revenues for FY 1991-1992 are presented in Table III-7 and Graph III-2.

(2) Property Taxes

As shown on Table III-7, the City estimates that general fund revenues from property taxes will be $143,568. This presents 11.3 percent of the City's total general fund revenues, and an increase of 9.01 percent over the previous year's budget.

Property taxes are levied on the basis of one percent of property assessment values. The growth of property tax revenues is largely dependent on new development and how extensively existing property is resold. Proposition 13 limited increases in the assessed valuations of property to two percent per annum for property that does not change ownership. Historically, the housing turnover rate in Firebaugh has been relatively low, so that the increase in property tax revenue is due primarily to new development. The assessed value for Firebaugh for the years 1970-1990 is shown on Table III-8.

(3) General Taxes

Sales tax revenue is the largest source of general tax revenue. General taxes represent the City's largest source of income. Revenues from the general taxes account for $938,827 in the 1991-1992 budget, representing 73.6 percent of the total General Fund revenues. This represents an increase of 3.62 percent over the previous year.

(4) Licenses and Permits

Revenues from business licenses and permits during 1991-1992 are estimated to be $52,525. This represents 4.1 percent of the total estimated revenues for the year, and an increase of 4.01 percent over the previous year.

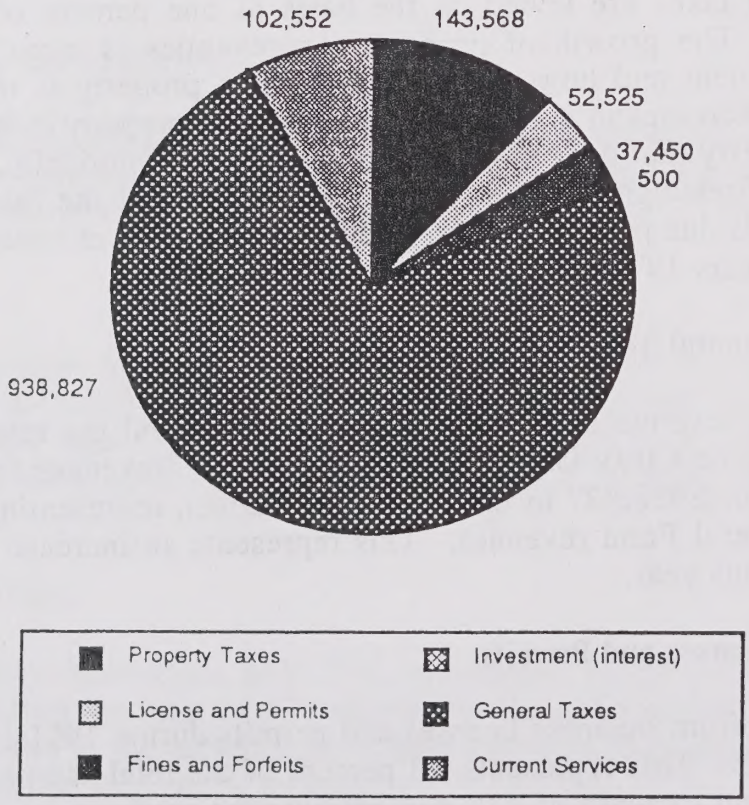
TABLE III-7

FIREBAUGH REVENUE SOURCES
1991-1992

Revenues	1991-1992 Budget	1990-1991 Budget	Variance	Percent Change
Property Taxes	$143,568	$131,700	$11,868	9.01
License and Permits	$52,525	$50,500	$2,025	4.01
Fines and Forfeits	$37,450	$36,400	$1,050	2.88
Investment (interest)	$500	$300	$200	66.67
General Taxes	$938,827	$906,000	$32,8827	3.62
Current Services	$102,552	$108,650	-$6,098	-5.61
Total Revenues	$1,275,422	$1,233,550	$41,872	3.39

GRAPH III-2

FIREBAUGH REVENUE SOURCES
1991-1992



Source: Firebaugh City Budget, 1991-1992

TABLE III-8

ASSESSED VALUATION

Year	Secured	Unsecured	Utilities	Total
1971	$2,763,297	$671,612	$295,770	$3,730,679
1972	$2,933,483	$700,363	$297,210	$3,931,056
1973	$3,336,979	$709,646	$317,360	$2,031,114
1974	$3,774,951	$678,678	$325,430	$4,779,059
1975	$4,148,712	$1,044,989	$330,000	$5,523,701
1976	$5,313,443	$1,235,175	$424,800	$6,973,418
1977	$5,989,120	$1,053,986	$533,460	$7,576,566
1978	$7,264,461	$1,198,008	$557,620	$9,020,089
1979	$7,804,600	$1,470,584	$594,330	$9,869,514
1980	$8,081,453	$920,691	*	$9,002,144
1981	$34,997,116	$9,242,753	*	$44,239,869
1982	$38,293,773	$9,384,941	*	$47,678,714
1983	$37,496,364	$8,193,279	$3,828,600	$49,518,243
1984	$39,068,711	$4,122,270	$7,817,966	$51,008,947
1985	$40,800,005	$9,153,160	$4,579,630	$54,532,795
1986	$41,790,261	$8,684,774	$5,019,710	$55,494,745
1987	$42,807,252	$7,515,709	$5,324,490	$55,647,451
1988	$43,342,669	$5,905,670	$267,113	$49,515,452
1989	$45,416,729	$5,865,301	$252,578	$51,534,608
1990	$64,044,538	$6,896,762	$263,349	$71,204,649

*Included with secured assessment, breakdown is not available

Sources: City of Firebaugh Notes to Financial Statements, June 30, 1979; June 30, 1978; June 30, 1977; June 30, 1976 (for years 1971-1979) and Lorrene Espoza, Supervisor, Special Accounting Office, County of Fresno, June 4, 1991 (for years 1980-1990)

(5) Fines and Forfeits

Estimated revenues from fines, forfeits, and penalties total $37,450 in the 1991-1992 budget. This represents an increase of 2.88 percent over the previous year and 2.9 percent of the total 1991-1992 budget.

(6) Interest

Estimated revenue in 1991-1992 from invested monies is only $500, or 0.04 percent of the total estimated budget. This represents a 66.67 percent increase over the 1990-1991 budget.

(7) Current Services

Estimated charges for current services (zoning fees, special police services, street sweeping, police reserve wages reimbursement, State of California Post Reimbursement, jail booking fees, other miscellaneous fees) contributed $102,552 to the 1991-1992 budget. The fees represent 8.0 percent of the total estimated budget. This represents a 5.61 percent decline from the previous year.

4. FINDINGS

- Firebaugh's employment is based primarily on agriculture and related services, based on the 1980 census and a 1991 survey of employers in Firebaugh.

- Much of the increase in Firebaugh's retail sales tax can be attributed to its increased population. Taxable sales per capita has fluctuated, rising in most years, with some declines during periods of economic recession.

- Due to its size and proximity to Fresno and Madera, Firebaugh experiences "leakage" of retail sales and related sales tax revenues to other cities. Purchases of convenience items and services by Firebaugh residents are provided primarily by local businesses.

- The largest General Fund appropriation category is police, comprising 47.9 percent of the total general fund in the adopted 1991-1992 budget. Other major items include: administration (17.1 percent); public works (9.7 percent); planning (4.6 percent); City Council (3.9 percent) and fire (3.4 percent).

- General taxes (including sales taxes) are the City's largest source of revenues, making up about 73.6 percent of the General Fund revenues. Other major revenue sources include: property taxes (11.3 percent) and current services (8.0 percent).

SOURCES CONSULTED

Austin, Glenda, Assistant City Manager, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Durham, Keyth, City Manager, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Espoza, Lorrene, Supervisor, Special Accounting Office, County of Fresno. Personal Interview. June 1991.

Firebaugh, City of. Firebaugh City Budgets 1990-1991 and 1991-1992.

Firebaugh, City of. Notes to Financial Statements. 1976-1979.

Fresno, County of. Firebaugh Community Audit. 1985.

Rossi, Fred, State Board of Equalization. Telephone Interview. June 1991.

State Board of Equalization. Resale Permits and Retail Sales, City of Firebaugh. 1970-1990.

U. S. Bureau of the Census. 1980 and 1990.

Walker, Nancy, Finance Director, City of Firebaugh. Personal and Telephone interviews. July-November, 1991.

PUBLIC FACILITIES AND SERVICES

1. INTRODUCTION

The development of a city is dependent upon the adequacy and availability of several interrelated public services and facilities. Each service or facility has its own set of opportunities and constraints, but each must effectively perform the service for which it is designed if development is going to occur in the city. This chapter focuses on water, sewage collection and treatment, drainage, schools, fire protection, and law enforcement, describing their various systems and capabilities and discussing their implications for the general plan.

Transportation facilities and services are discussed separately in Section IV and parks and recreational facilities are discussed in Section VI.

2. GENERAL GOVERNMENT

Firebaugh is a general law city, operating under a council/manager form of government. The City Council members are elected to four-year, staggered terms. The mayor is elected by the Council members for a two-year term.

The City also has a five-member Planning Commission appointed by the City Council which provides advice to the Council on land use and zoning matters and which also has decision-making responsibilities on some non-legislative matters.

The administration of the City is organized into several departments which are directed by the City Manager. These departments include planning, public works/engineering, utilities, city clerk, police, and fire. The City is in the process of establishing a recreation department. As of October 1991, the City had 24 permanent full-time employees and approximately seven part-time employees.

City operations, including police and fire, are concentrated in one facility located at 1575 11th Street. This building also houses the City Council Chambers. The City's corporation yard is located on the southwest corner of 11th Street and the Q street alignment.

Figure V-1 shows the location of these and other public and quasi-public facilities.

3. WATER SERVICE

a. Domestic Water Supply

The City of Firebaugh owns and operates the major water system in its Sphere of Influence. The system provides water service to all residences in the City as well as to commercial and industrial users. In addition, the City provides water service to the unincorporated communities of Del Rio and Las Deltas. Water is provided to the Eastside Acres Subdivision by a private water system, and residences in the other unincorporated areas in the Sphere of Influence are served by private wells.

The City's current water system includes four operating wells, two filter tanks, three storage tanks (with a total 3.6 million gallon capacity) and a network of distribution lines consisting of 4-inch, 6-inch, 8-inch, 10-inch, 12-inch, and 14-inch diameter pipes. Figure V-2 shows the location of the City's wells and main distribution lines. Water from the City's wells is of good quality with the exception that iron and manganese exceed secondary standards set by the State Department of Health. When secondary standards are not met, the effects are not necessarily harmful to people, but may be harmful to the water system. Table V-1 shows the production capacity for each of the City's wells.

TABLE V-1

PRODUCTION CAPACITY

Well Number	Production Capacity
Well No. 3	645 gpm
Well No. 7	1,500 gpm
Well No. 10	1,150 gpm
Well No. 11	1,500 gpm

Source: Fred Rabe, Firebaugh Engineer

As of September 1991, the City had approximately 1,112 customers in its system. They include 82 users in Del Rio and 104 users in Las Deltas. These two areas are on master meters, but each individual unit is not metered. Historically, residential connections to the water system have not been metered. In April 1991, however, the City adopted a new water conservation plan which requires all new residences to be metered. All commercial and industrial uses in the City are metered. In 1990, the total annual water usage was 560 million gallons. This works out to an average of 1.5 million gallons per day (mgd). The peak demand on the system is about 4 mgd. Although the City's wells have the capacity to produce this water, the capacity of the filter system is only

TRANSPORTATION AND CIRCULATION

1. INTRODUCTION

The transportation and circulation system of a city is one of the most significant elements which a general plan must address. It affects, directly or indirectly, land use patterns, air quality, plants and animal habitats, environmental noise, energy use, and community appearance. It must provide for movement of people and be accessible to all segments of the population, including the disadvantaged, the young, the poor, the elderly, and the handicapped. It must also provide for movement of goods in, around, and through the city. The efficiency of a community's transportation and circulation system can contribute to, or adversely affect, the economy of a city.

This section discusses the transportation system and services, including streets and roads, parking, public transit, air service, and rail service, in Firebaugh.

2. STREET AND ROADWAY SYSTEM

a. Regional Context

Firebaugh is located along State Highway 33 and the San Joaquin River, at the northern edge of western Fresno County. It is approximately 29 miles west of the Fresno-Clovis Metropolitan Area and 18 miles east of Interstate 5, the major surface transportation route between San Francisco and Los Angeles. The main transportation route through Firebaugh is Highway 33, which traverses the interior of the San Joaquin Valley, linking Firebaugh with other small communities, including its immediate neighbors, Dos Palos, 12 miles northwest, and Mendota, 8 miles southeast.

b. Physical Constraints on the Street and Road System

Physical constraints on the City's circulation system are those features which hinder the free movement of goods and people through the City and surrounding area. They may be either natural or man made. The primary physical constraints on the circulation system in the Firebaugh area are:

- Highway 33 and the Southern Pacific Railroad bisect the City on the north-south alignment, preventing easy movement of people and goods in the east-west direction.

- The Southern Pacific Railroad tracks limit the potential number of east-west street connections between the portions of the City located on either side of the railroad alignment.

- There are several major canals in Firebaugh which tend to act as barriers to the extension of the street system.

- Because the San Joaquin River runs along the eastern edge of the City, the only entrance to the City from the east is from Fresno-Madera Avenue (Avenue 7 1/2).

- Because of the railroad and canals, there is only one entrance to the City (Nees Avenue) from the west.

c. Definitions and Standards

The following subsections are definitions and standards for the street system in Firebaugh (the cross section for each street is shown on Figure IV-1):

(1) Alleys

The current development standards for Firebaugh subdivisions do not include alleys. Alleys in the older parts of the City have 20-foot rights-of way.

(2) Local Streets

Local streets provide immediate access to properties, are likely to be discontinuous in alignment, and generally carry very light traffic volumes. Local streets have a minimum street right-of-way of 60 feet (local streets in the original Firebaugh townsite had 80-foot rights-of-way). Those streets not identified as being in one of the other street classifications described below fall into this classification.

(3) Collector Streets

Collector streets provide for internal traffic movement within an area and connect local streets to the arterial system. Collector streets are two-lane streets with 64 foot rights-of-way. Any uses on collector streets should be designed to discourage vehicles from backing onto the streets.

Existing collector streets in Firebaugh include:

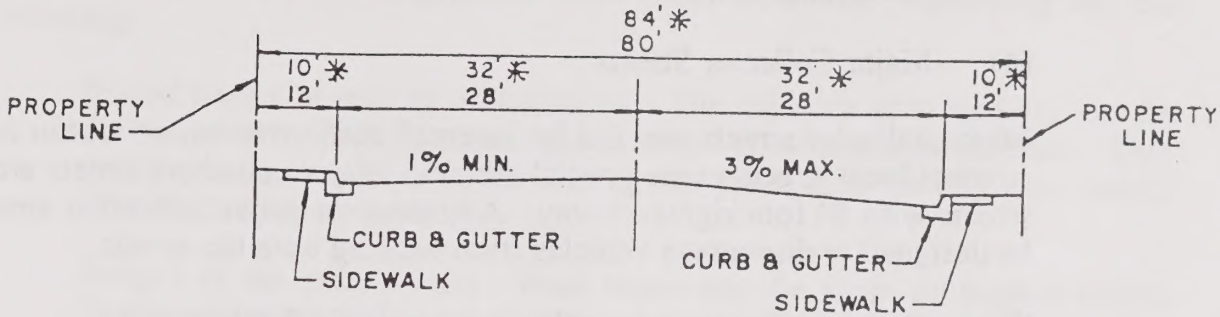
- P Street, extending from 13th Street to Clyde Fannon Road

- Clyde Fannon Road, between Highway 33 and Behymer Avenue

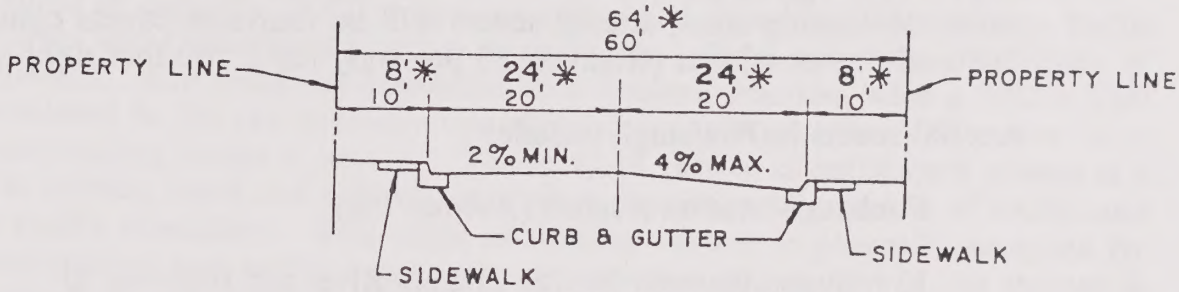
- Saipan Street, east of Highway 33

- Q Street, between 13th Street and Saipan Street

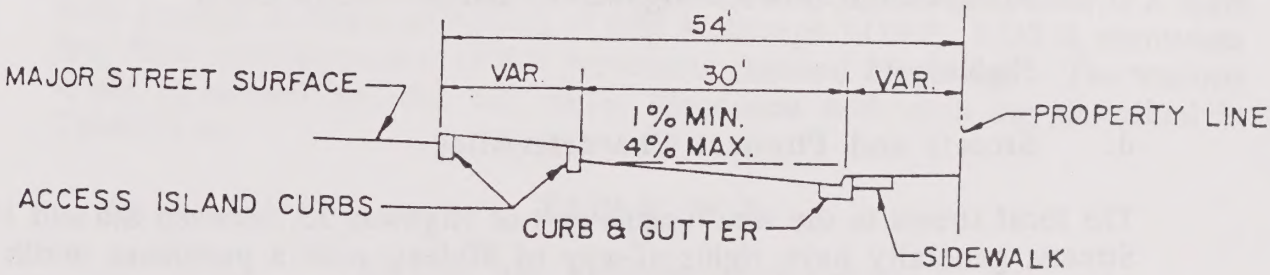
Figure IV-1



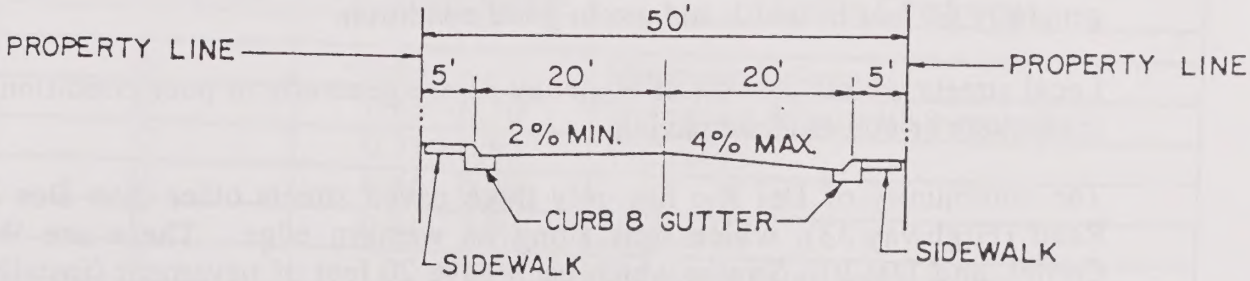
80-FOOT STREET
84' * MAJOR COLLECTOR



60-FOOT LOCAL STREET
64' * LOCAL COLLECTOR



ACCESS ROAD



50-FOOT STREET

TYPICAL STREET SECTIONS	REVISIONS	CITY OF FIREBAUGH Fred H. Rake CITY ENGINEER	ST N P-

- Landucci Street, between Saipan Street and Cardella Street
- Cardella Street, between Landucci Street and Morris Kyle Drive

(4) Major Collector Streets

Major collector streets provide for internal traffic movement within an area and connect local streets to the arterial system. Major collectors streets are four-lane streets with 84 foot rights-of-way. Any uses on major collection streets should be designed to discourage vehicles from backing onto the streets.

There are currently no major collectors streets in Firebaugh.

(5) Arterial Streets

Arterial streets provide for through movement on a continuous route joining major traffic generators, other arterials, expressways, and freeways. In the newly developing areas, arterial streets will be four-lane streets constructed on rights-of-way of 80 feet (Highway 33 presently has a 100-foot right-of-way).

Arterial streets in Firebaugh include:

- Firebaugh-Madera Avenue (Avenue 7 1/2)
- 13th Street, between the San Joaquin River and Highway 33
- Nees Avenue, between Highway 33 and the Outside Canal
- Highway 33

d. Streets and Physical Characteristics

The local streets in the area located east of Highway 33, between 8th and 16th Streets, generally have rights-of-way of 80 feet, with a pavement width of 56 feet. These streets, with some exceptions, are in generally good condition. North and south of this area, in the newer areas of the City, local streets are generally 60 feet in width and are in good condition.

Local streets which lie west of Highway 33 are generally in poor condition with inadequate or non-existent paving.

The community of Del Rio has only three paved streets other than Dos Palos Road (Highway 33), which runs along its western edge. These are Welty, Cordel, and Del Rio Streets which each have 20 feet of pavement (installed in 1991) in their rights-of-way.

The design capacity of a street is the volume of traffic that it can accommodate without the degree of congestion falling below a pre-selected level. The design and maximum roadway capacities will vary, however, depending on the following:

- Signal timing at critical intersections. The capacity of a roadway can be increased by providing more "green time" at critical intersections. This can be done, however, by decreasing the green time on the cross street, thus decreasing its capacity.

- Length of the peak period. Peak hours are the times of highest traffic flows, which generally occur during the morning and afternoon commute hours. The more hours that a roadway operates at its capacity, the higher the daily capacity of that roadway. As traffic congestion increases in the Firebaugh area, the length of the morning and afternoon peak periods will also increase.

Volume to capacity (V/C) ratios are calculated based on the roadway traffic volumes and capacities and serve as indicators of the operating conditions of roadways. The ratios are expressed as a decimal fraction, with a V/C = 1.00 considered to be the roadway operating at capacity. The V/C ratios have corresponding levels of service. The level of service classification system is a scale ranking street and highway operations based on the amount of traffic and the traffic conditions. This scale or ranking system is generally accepted by transportation and traffic engineers. A complete description of the system is included in the Highway Capacity Manual (Special Report 87), Highway Research Board, 1965. Briefly, the level of service ranking system is a scale with a range of Level of Service (LOS) A through LOS F. LOS A represents free flow conditions and LOS F represents jammed conditions. The various levels of service and the V/C ratios associated with each are described in Table IV-1.

TABLE IV-1

LEVEL OF SERVICE CRITERIA

Level of Service	V/C Ratio Range	Traffic Conditions
A	<0.61	Minimum Delay
B	0.61 - 0.70	Increasing delay with increasing
C	0.71 - 0.80	V/C ratios
D	0.81 - 0.90	
E	0.91 - 1.00	High delay
F	>1.00	Excessive delay and backups

Source: Transportation Research Board. *Circular 212 - Interim Materials on Highway Capacity.* 1980.

LOS designations and V/C ratios are more appropriate for peak hour operations at intersections than for roadway segments, but can be used in a general way for roadway segments. The intersections are the critical "valve"—points in the street system where right-of-way assignment for conflicting traffic flows is accomplished by intersection controls (e.g., signals or STOP and YIELD signs). Other factors such as street segments with narrow bridges or intersections with odd angles or more than four streets intersecting at one point can affect traffic flow conditions. Firebaugh, however, has few of these problems.

Although LOS C is generally considered to be acceptable in roadways in urban communities, in relatively smaller communities such as Firebaugh, any delay is apt to be considered unacceptable. Heavy traffic and congestion may be tolerated during special events, but not on a regular day-to-day basis. LOS A and LOS B are probably considered by most motorists in Firebaugh to be the only acceptable levels of service on their streets.

The daily traffic volume levels associated with LOS A through LOS E for two-lane and four-lane streets are shown on Table IV-2. The volumes shown apply to collector or arterial streets when they are considered to be the major streets at intersections with other streets. Even lower volumes apply to streets when they are considered to be the minor streets at intersections.

TABLE IV-2

MAXIMUM DAILY TRAFFIC VOLUMES ASSOCIATED WITH EACH LEVEL OF SERVICE

Level of Service	Maximum V/C Ratio	Maximum 2-way Volume (vpd)	
		Two-lane Street	Four-Lane Street
A	0.60	7,500	15,000
B	0.70	8,750	17,000
C	0.80	10,000	20,000
D	0.90	11,250	22,500
E	1.00	12,500	25,000

Source: Transportation Research Board. *Circular 212 - Interim Materials on Highway Capacity.* 1980.

It should be noted that these are generalized approximations and should be used only as rough guidelines. Many factors associated with particular streets could increase or decrease these values proportionately, such as the width of traffic lanes, the relative amount of cross-traffic an intersections, the presence or

absence of curb parking along the street, the presence or absence of left-turning lanes at intersections, etc.

e. Signalized Intersection Controls

The only intersection controlled by a traffic signal in Firebaugh is the intersection of 12th Street with Highway 33. The intersection of 13th and P Streets is controlled by a flashing red light.

f. Average Daily Traffic (ADT)

ADT levels (1990) on Firebaugh's streets range from a few hundred ADT on local streets to 5,300 to 8,100 ADT on Highway 33 and slightly less than 4,400 ADT on Avenue 7 1/2, immediately adjacent to the east side of the San Joaquin River. The heaviest volume of traffic occurs on Highway 33, between 12th and 15th Streets.

The traffic volumes available for streets in Firebaugh are shown on Table IV-3.

TABLE IV-3

1990 TRAFFIC VOLUMES ON SELECTED STREETS

Roadway	Traffic Volumes (average daily traffic)
Highway 33, Outside Canal to 15th Street	6,325
Highway 33, 15th to 12th Street	8,100
Highway 33, 12th to 8th Street	7,500
Highway 33, 8th Street to City Limits	5,300
Avenue 7 1/2, East of San Joaquin River	4,374

Sources: California Department of Transportation and Madera County Roads Department, 1991

g. Traffic Generation Rates

Traffic generation rates are based on trip ends, with a trip end being identified as a one-way vehicle movement which either begins or ends within the site of the land use being considered. Daily and peak hour trip rates are shown on Table IV-4 for several different land use categories. These trip rates represent the number of trip ends which development in each of the categories would generate per unit of measure indicated (i.e., per dwelling unit, per mobile home, per 2,000-square feet of floor space, per acre, etc.).

TABLE IV-4

TYPICAL TRIP GENERATION RATES

Land Use	Type	Per	Daily Rate (Trip Ends)	P.M. Peak Hour Rate (Trip Ends)
Residential	Single family	DU[1]	9.55	1.01
Residential	Multi-family (low rise)	DU	6.59	0.62
Residential	Mobile home	DU	4.81	0.56
Residential	Elderly Housing, attached	DU	-	0.08
Office	25 or fewer employees	Employee	25.00	0.92
Restaurant	Fast food w/drive thru	1,000 sq. ft.	632.12	36.53
Restaurant	High turnover coffee shop	1,000 sq. ft.	205.36	13.29
Restaurant	Quality	1,000 sq. ft.	96.51	7.66
Industrial	Light	Acre	51.80	7.26
Industrial	Heavy	Acre	6.75	2.16
Industrial	Warehouse	Acre	56.08	8.75
Commercial	Service station	Pump	-	15.18
Commercial	Convenience Market w/gas pumps	1,000 sq. ft.	-	73.05
Commercial	Hardware/Paint Store	1,000 sq. ft.	51.29	4.87
Commercial	Supermarket	1,000 sq. ft.	-	10.34
Commercial	Retail/general merchandise	1,000 sq. ft.	-	4.8
Commercial	Building materials/lumber store	1,000 sq. ft.	30.56	3.27
Commercial	Discount Store	1,000 sq. ft.	70.13	3.43

[1]Dwelling Unit

Source: Trip Generation, Institute of Traffic Engineers, 1991

Peak hour trips represent the one-hour volume measured entering, exiting, or both during the weekday PM peak hour of the site. The peak hour trips are included for each category of land use shown on Table IV-4. The amount of traffic generated in the peak hour varies somewhat by land use type, and not all categories of land use have the same peak hour. Also, the peak hour of each category of land use may not correspond with the peak hour use of adjacent streets (for example, the peak hour of Highway 33 may be 5:00 p.m. to 6:00 p.m., while the peak hour of a convenience store located on Highway 33 might be 6:00 p.m. to 7:00 p.m.).

h. Traffic Accident Patterns

In 1990, there were only eight traffic accidents in Firebaugh. In 1989, however, there were 35 accidents and in 1988, there were 58 accidents. The types and severity of traffic collisions in Firebaugh are shown on Table IV-5. During the three-year period, 78 percent of all accidents involved only property damage, with the range being 74 to 81 percent. In 1988 and 1989, there were several accidents which involved pedestrians and bicyclists, but none in 1990. Most traffic accidents involved one motor vehicle hitting another motor vehicle or a fixed object.

TABLE IV-5

CITY OF FIREBAUGH
TYPES OF TRAFFIC COLLISIONS AND SEVERITY

	1988		1989		1990	
Motor Vehicle (Vehicle) versus:	Property Damage Only	Fatality or Injury	Property Damage Only	Fatality or Injury	Property Damage Only	Fatality or Injury
Pedestrian	0	1	0	1	0	0
Bicycle	0	3	0	2	0	0
Parked Vehicle	11	1	2	0	0	0
Other Vehicle	21	2	20	4	6	2
Fixed Object	14	3	4	1	0	0
Other Object	0	0	0	1	0	0
Non-collision	0	1	0	0	0	0
Other	1	0	0	0	0	0
Subtotal	47	11	26	9	6	2
All Accidents	58	58	35	35	8	8

Sources: Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 1988, 1989, and 1990

In Table IV-6, the same traffic data is shown, with the addition of contributing circumstances added. In 1988, the major contributing causes of traffic accidents, in order, were alcohol/drugs, unsafe speed, unsafe starting or backing, and auto or pedestrian right-of-way disputes. Almost 45 percent of all accidents involved one of these primary contributing factors. In 1989, the major contributing causes, in order, were alcohol/drug use, unsafe speed, auto or pedestrian right-of-way disputes, and unsafe starting or backing. About 60 percent of all accidents involved one of these contributing circumstances. In 1990, with relatively few accidents, the major contributing circumstance for three accidents was unsafe speeds and for two accidents was STOP sign and signal violations. Each of the remaining accidents had a separate major contributing circumstance.

Overall, the largest contributing factor for all accidents during the three-year period was the alcohol/drug category, at 17 percent. The second highest was the unsafe speed category, at almost 13 percent.

Table IV-7 shows the major intersections and streets where accidents occurred during 1988-1990. As shown by the table, many accidents occur near or at the intersections of east-west streets with Highway 33, particularly at 12th and 13th streets and at Storey Avenue. A significant number of accidents also occur in the central business district (note the accidents shown for O/12th, O/10th and 12th/M Streets). As Table IV-7 also indicates, the greatest number of accidents in the Firebaugh SOI are on Highway 33 or near a Highway 33 intersection (almost 30 percent of all accidents during the three-year period), with the second highest number being on O Street or near an O Street intersection (25 percent).

i. Plans for Improvement

There are no identified major roadway improvement projects planned by the City, Fresno County, or Caltrans within or in the vicinity of the City of Firebaugh. The City's Capital Improvement Program does call for some minor street improvements to be made over the next five years.

j. Parking

Parking in the Firebaugh Central Business District primarily consists of angle parking spaces on public streets. Few businesses have on-site parking. There is one small public parking lot located on 11th and O Streets. This parking lot needs to be upgraded.

Construction or major alteration of any buildings or structures is subject to the off-street parking standards set forth in the *Firebaugh Zoning Ordinance*.

TABLE IV-6

CITY OF FIREBAUGH TRAFFIC COLLISIONS CONTRIBUTING CIRCUMSTANCES AND SEVERITY

Primary Contributing Circumstance:	1988		1989		1990	
	Property Damage Only	Fatality or Injury	Property Damage Only	Fatality or Injury	Property Damage Only	Fatality or Injury
Alcohol/Drugs	7	1	3	5	1	0
Unsafe Speed	6	2	5	0	2	1
Following too closely	1	0	1	0	0	0
Wrong side of road	1	0	1	0	0	0
Improper passing	2	0	0	0	0	0
Improper turning	3	0	2	0	1	0
Unsafe land change	3	1	0	1	0	0
Auto or pedestrian right-of-way	4	1	4	0	1	0
Other improper driving	0	0	0	0	0	0
Hazardous Parking	0	0	0	0	0	0
Unsafe starting or backing	5	0	4	0	0	0
Signals and STOP signs	1	0	1	0	1	1
Other than driver	0	2	0	1	0	0
Equipment (brakes, etc.)	1	1	0	0	0	0
Pedestrian violation	0	0	0	0	0	0
Other	1	2	0	0	0	0
Unknown	12	1	5	2	0	0
Subtotals	47	11	26	9	6	2
All Accidents	58	58	35	35	8	8

Sources: Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 1988, 1989, and 1990

TABLE IV-7

CITY OF FIREBAUGH
ACCIDENT INFORMATION

	1988	1989	1990
Total Accidents	8	35	58
Intersection*	1988	1989	1990
12th Street/Highway 33	2	2	1
Storey Avenue/Highway 33	1	1	2
Bridge 42/Highway 33	1	0	3
O Street/12th Street	1	3	3
13th Street/Highway 33	0	2	3
O Street/10th Street	0	1	5
12th Street/M Street	0	2	5
Highway 33/Saipan Street	0	1	3
Streets*	1988	1989	1990
Highway 33	5	9	16
O Street	1	9	15
12th Street	2	10	11
M Street	1	2	6
13th Street	0	5	6

*with greatest number of accident-related incidents

Sources: Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 1988, 1989, and 1990

k. Existing and Potential Problem Areas

Existing daily traffic volumes are, for the most part, within the traffic-carrying capacity of Firebaugh's streets; however, future new development could result in traffic increases which might produce traffic problems at some locations, depending on the location, amount, and type of land use involved. In the process of updating the City's General Plan, it will be important to evaluate streets with respect to their ability to accommodate any significant traffic volume increases which may be projected as a result of planned future development.

There are a few areas within the City's circulation system which have been identified during the background investigation as having the potential for future traffic problems. These include:

- conflicts between traffic and pedestrians on Highway 33, particularly in regard to pedestrians crossing the highway;
- future circulation in the developing area on both the east and west sides of Clyde Fannon road;
- integrating Del Rio into the City's circulation system;
- parking in the central business district.

3. PUBLIC TRANSIT

Intercity bus service is provided by Greyhound Bus Lines, with a terminal in Fresno. Fresno County Rural Transit provides intercity service on a demand-responsive basis for senior citizens and handicapped individuals. The service is a quasi-private entity subsidized by the cities it serves.

No taxi service is presently available in Firebaugh.

4. AIR SERVICE

a. Firebaugh Municipal Airport

The Firebaugh Municipal Airport is located on the north side of Nees Avenue, west of the Main Canal. It is owned and operated by the City of Firebaugh. The airport has one paved and lighted landing strip, 3,100 feet long and 60 feet wide. Typical users are private planes and crop dusters.

The airport has no air control tower.

b. Commercial Air Service

The nearest commercial air service available to Firebaugh residents is at the Fresno Air Terminal, in the City of Fresno, about 35 miles southeast of Firebaugh.

5. RAIL SERVICE

The Southern Pacific Railroad line is located on the west side of and parallel to Highway 33. Southern Pacific Transportation Company operates freight trains along this line. An average of one train per day passes through Firebaugh.

The nearest AMTRAK passenger train stations are located in the cities of Fresno and Madera.

6. FINDINGS

- Firebaugh's street system has a number of man-made and natural barriers to the orderly and efficient development of a local circulation system. These obstacles include:
  - The difficulty and cost of making street extensions and connections as a result of barriers, such as the railroad and canals; and
  - The lack of adequate, undeveloped sites for additional public parking facilities in areas of highest existing and future parking demands.
- Existing daily traffic volumes are generally within the traffic-carrying capacity of Firebaugh's streets. The highest volumes are experienced on Highway 33 and on 12th and 13th Streets.
- Potential future problems with traffic operations and safety exist at the intersections of east-west streets, especially 12th, 13th, Storey Avenue, and Saipan Street, with Highway 33 and at some intersections in the central business district.
- Public transportation in Firebaugh is limited to the demand-responsive service provided by the Rural Transit Agency. Intercity bus service is available to Firebaugh residents by Greyhound, with stations located in Madera and Fresno.
- The Firebaugh Municipal Airport is a public airport which primarily serves private planes and crop dusters.

- The Southern Pacific Railroad lines run through Firebaugh. Approximately one train passes through Firebaugh daily. Passenger service is not available.

SOURCES CONSULTED

Branstetter, Ray, Regional Engineer, Southern Pacific Transportation Company. Telephone Interview. July 1992.

California Highway Patrol. *Statewide Integrated Traffic Records System (SWITRS) Traffic Collision Report for the City of Firebaugh.* 1988, 1989, and 1990.

California, State of. Department of Transportation. 1991.

Durham, Keyth, City Manager, City of Firebaugh. Personal and Telephone Interviews. January-December 1991.

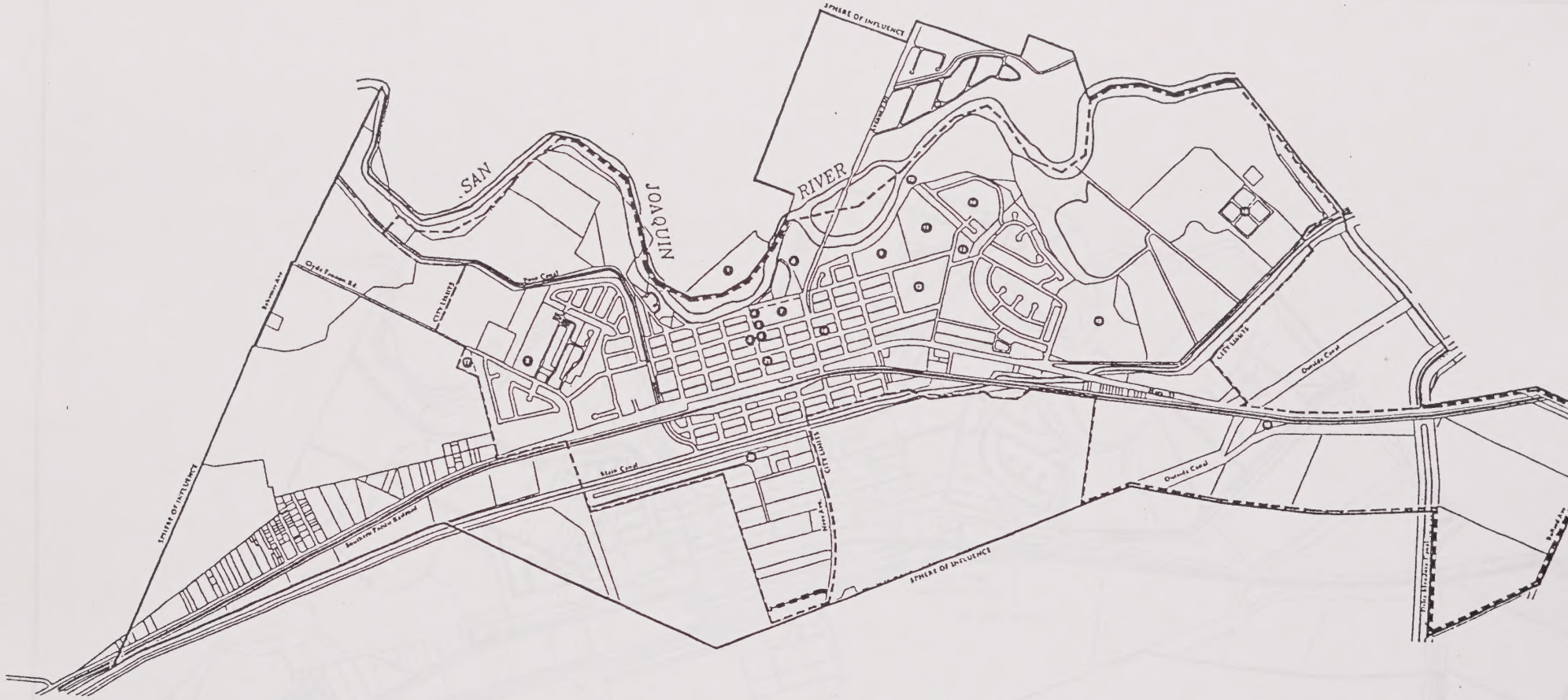
Highway Research Board. *Highway Capacity Manual (Special Report 87).* 1965.

Institute of Traffic Engineers. *Trip Generation.* 1991.

Madera, County of. Roads Department. 1991.

Rabe, Fred, City Engineer, City of Firebaugh. Personal and Telephone Interviews. January-December 1991.

Transportation Research Board. *Circular 212 - Interim Materials on Highway Capacity.* 1980.



LEGEND

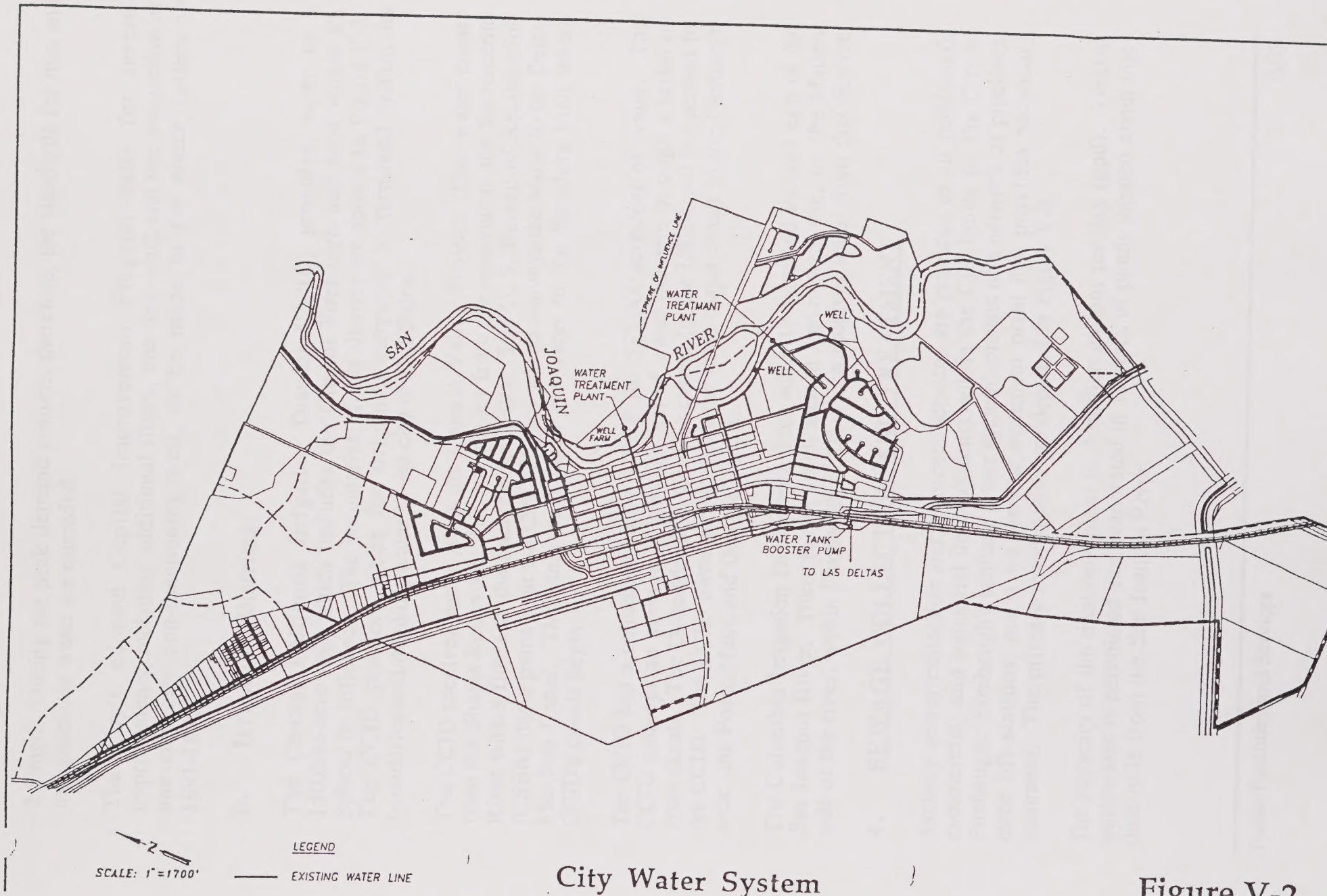
1. City Well Farm
2. Maldonado Park
3. City Hall
4. City Corporation Yard
5. Firebaugh Health Center
6. U.S. Post Office
7. Mills Intermediate School
8. Andrew Firebaugh Park
9. Firebaugh City Park
10. Firebaugh Well Site
12. Firebaugh Junior High School
13. West Hills Community College Branch
14. St. Joseph's Parochial School
15. Firebaugh High School
16. Courthouse/Library
17. Ponding Basin
18. Wastewater Treatment Plant
19. Historical Cemetery
20. Firebaugh Municipal Airport
21. Parking Lot

N

Scale: 800 ft

Public and Quasi-Public Facilities

Figure V-1



City Water System

Figure V-2

2.5 mgd. During the peak demand periods, therefore, the standards for iron and manganese in water are exceeded.

The City's adopted Capital Improvement Program calls for several improvements, including additional filters, one new well, and the connection of one currently non-functioning well, to be made to the water system in 1991-1992.

b. Irrigation Districts

The Central California Irrigation District (CCID) provides water to a 150,000-acre area which includes the City of Firebaugh and land within its Sphere of Influence. The boundaries of this district are shown in Figure V-3. The CCID provides water for irrigation purposes to farmland within its boundaries and drinking water to the city of Dos Palos.

The CCID receives water from the Central Valley Project. This water comes from the Shasta Reservoir. The water goes from the reservoir to the Sacramento River which flows to the Sacramento Delta. The U. S. Bureau of Reclamation (USBR) has a pump near the City of Tracy which conveys the water to the Delta-Mendota Canal. The canal then takes the water to the Mendota Pool where CCID's canals begin.

The CCID has a contract with the USBR for 532,000 acre-feet of water. The CCID conveys an average of 3.3 acre-feet of water per acre through a series of open canals. The Delta-Mendota Canal is owned by the USBR and is operated by the CCID. The CCID owns and operates the three major canals in the Firebaugh area: the Poso, Main, and Outside Canals.

The Colombia Irrigation District provides water to farmland located east of the San Joaquin River. There is one small area in agricultural use, on the Madera side of the river, within Firebaugh's SOI which receives water from this district.

4. SEWAGE COLLECTION AND TREATMENT

Sanitary sewer collection and treatment services are provided to all residential, commercial, and industrial developments within the City limits by the City of Firebaugh. Firebaugh's sanitary sewer system consists of a network of pipelines, three lift stations, and a wastewater treatment plant that provides secondary treatment. The primary sewer mains are depicted in Figure V-4.

The capacity of the treatment plant is .5 million gallons per day (gpd). Treated wastewater is percolated and evaporated in 12 acres of ponds located about one-third mile from the San Joaquin River.

In 1991, sewer flows averaged 260,00 to 300,000 gpd, with the peak flow being 300,000 gpd. Peak flow during the summer is about 240,000 gpd.

5. STORM DRAINAGE

The City's storm drainage system is composed of one detention basin and storm drain lines. Storm water in Firebaugh has historically been pumped into Central California Irrigation District canals or allowed to flow by gravity into the San Joaquin River. Detention basins, however, are being required in conjunction with new development.

The Del Rio Community does not have any storm drainage system.

The City of Firebaugh is in the process of developing a Master Storm Drainage Plan. The plan should be completed in 1992.

6. LAW ENFORCEMENT

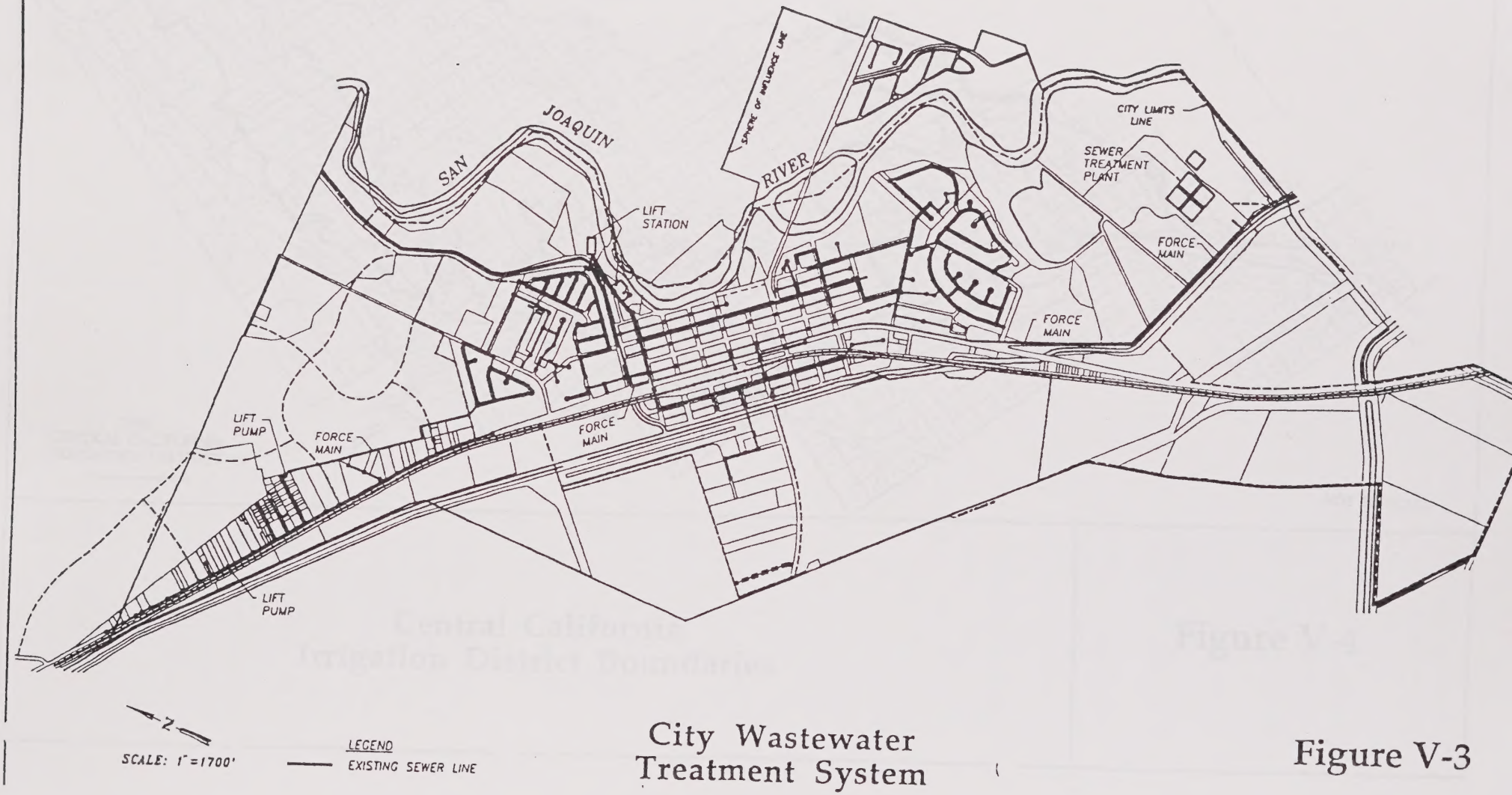
Law enforcement within the City limits is provided by the Firebaugh Police Department. The police department is located at 1575 11th Street.

As of October 1991, the police department employed eight sworn officers, six Level 1 reserve officers (full police officer power when on assignment), four non-sworn clerical staff, and one sworn clerical staff. The ratio of sworn officers to 1,000 population is 1.6.

One patrol beat for the entire City is operated by the police department. The number of patrol cars in action at one time ranges from one to three. Generally, during the week one patrol car is on duty on a twenty-four hour basis and one additional car, on a supervisory basis, is on duty during the morning and evening hours. On the weekends, a third car is placed on patrol. The average staffing is one officer per patrol unit. General response time for all reported offenses or complaints in the City is two minutes.

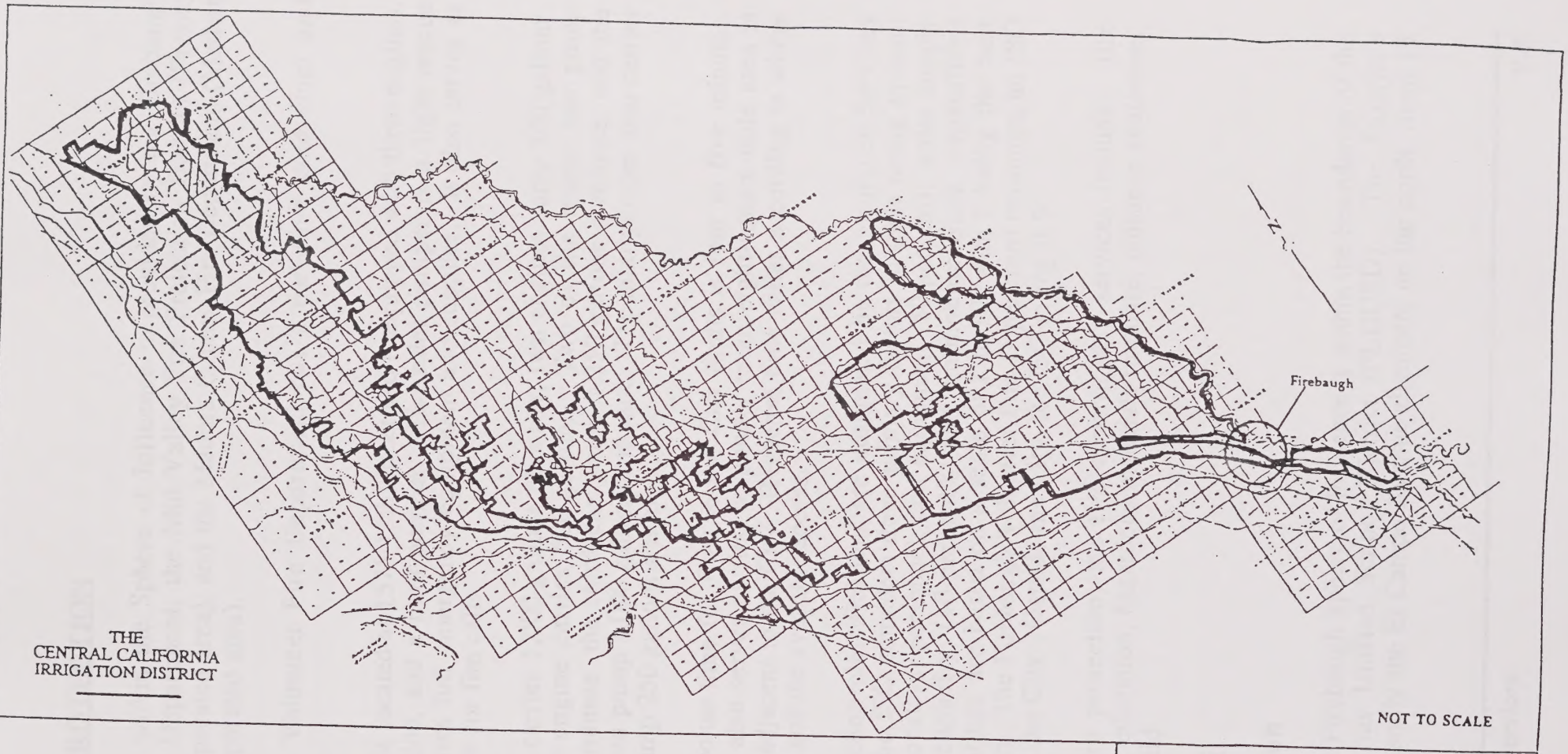
Law enforcement in the unincorporated area is the responsibility of the Fresno County Sheriff's Department (Fresno County) and the Madera County Sheriff's Department (Madera County). Coroner's service is provided throughout each county by their respective Sheriff's Departments. The City has one specific narcotics-related mutual aid agreement with the Fresno County Sheriff's Department and there is a general mutual agreement aid between all law enforcement agencies in Fresno County.

The California Highway Patrol patrols Highway 33, which passes through the Sphere of Influence.



City Wastewater Treatment System

Figure V-3



Central California
Irrigation District Boundaries

Figure V-4

7. FIRE PROTECTION

Fire Protection within the Sphere of Influence is provided by the Firebaugh Volunteer Fire Department, the Mid-Valley Fire Protection District (Fresno County unincorporated area), and the Madera County Fire Department (Madera County unincorporated area).

The Firebaugh Volunteer Fire Department has a part-time paid chief and 28 volunteers.

The fire station is located at 1575 11th Street and is equipped with three engines, one reserve engine, and a mini-pumper. The mini pumper is a light rescue vehicle and carries full emergency equipment and supplies. It also serves as command vehicle for fire calls.

One fire engine carries 1,000 gallons of water, two engines carry 500 gallons, and the reserve engine carries 500 gallons. Two of the trucks can pump 1,000 gallons a minute, the third can pump 1,250 gallons a minute, and the reserve vehicle can pump 1,000 gallons a minute. The mini pumper also carries water and can pump 250 gallons a minute.

The average response time for fires in the City limits is four to five minutes. The Department also serves as first responder to an eight-square-mile area in Madera County, adjacent to the City. Response time varies according to where the fire is located and the available access.

Public fire protection classifications are designated by the Insurance Services Office (ISO). The ISO considers three primary factors in their rating system: fire department location, personnel, and equipment (50 percent); water supply and fire flow capacity (40 percent); and communications capabilities (10 percent). Ratings are based on a scale of 1 to 10, with 1 being the best possible protection. The Firebaugh Volunteer Fire Department maintains an ISO rating of 6 within the City. Outside the City, the ISO rating is 9.

In addition to fire protection, the fire department's services include: fire prevention, public education, hazardous materials response, nuisance abatement, and medical first aid.

8. SCHOOLS

a. Introduction

All land within the Firebaugh Sphere of Influence is within the boundaries of the Firebaugh-Las Deltas Unified School District (FLDUSD). The District's boundaries are generally the El Campo Avenue alignment on the north, Road 15

on the east, and Shields Avenue on the south. The western boundary fluctuates between Millux, Fairfax, and Brannon Streets.

b. Facilities

The FLDUSD operates one primary school, one intermediate school, one junior high school, one high school, and one continuation school. All of the schools are located in the City of Firebaugh. Addresses of the schools and their respective grades are given below. The locations of schools within the City are shown in Figure V-1.

School Name/Address	Grades Served
Bailey Primary School 1691 Q Street, Firebaugh	grades K-3
Mills Intermediate School 1191 P Street, Firebaugh	grades 4-5
Firebaugh Junior High School 1600 16th Street, Firebaugh	grades 6-8
Firebaugh High School 1976 Morris Kyle Drive, Firebaugh	grades 9-12
El Puente Continuation High School West Hills Community College District Campus 1666 Saipan, Firebaugh	Continuation grades 9-12

The District also operates an alternative school, Riverview. Students attend classes at various locations in the City.

The District is not currently operating any preschool or latchkey programs. It is, however, seeking funding for such programs and hopes to begin offering preschool classes for 48 children by Spring 1992 and to begin a latchkey program by Fall 1992. The implementation of these programs will depend upon the availability of funding.

The ratio of students to teachers in the District is about 30-31:1 at the K-6 level, about 33:1 at the junior high school level, and about 30:1 at the high school level.

c. Enrollment and Capacities

Enrollment in each school and the schools' capacity based on both the District and State formulas are presented in Table V-2.

The capacities described in Table V-2 do not include the capacity which would be provided if the District placed its schools on year-round schedules. Although the District has no immediate plans to place any schools on year-round schedules, it might be necessary for one or more schools to be on year-round schedules by 1993-1994.

TABLE V-2

SCHOOL CAPACITY AND ENROLLMENT

School	Grade	State Capacity	District Capacity	October 1991 Enrollment
Bailey Primary	K-3	557	472	601
Mills Intermediate	4-5	330	252	252
Firebaugh Junior High	6-8	540	428	389
Firebaugh High	9-12	534	433	471
El Puente Continuation	9-12	0	35	34
Riverview Alternative	N/A	N/A	N/A	4

Source: Firebaugh-Las Deltas Unified School District, October 1991 CBED Report

The FLDUSD faces special needs for bilingual and bicultural education because nearly 87 percent of its enrollment is Hispanic in origin. The District also experiences a large increase in its Hispanic population each spring when children of migrant workers who are housed in migrant housing units in Firebaugh enroll in the District.

The District is not currently offering any special programs for migrant children. The majority of children who attend summer school programs in the District are migrant children.

d. Development Fees

State law permits school districts to charge development fees for new development where the District can demonstrate a nexus between the development and a need for new school facilities. The District is currently assessing new residential development at $1.58 per square foot and new commercial and industrial development at $0.26 per square foot. These are the maximum fees which can be charged under current law.

e. Student Yield Factors

New single and multiple family residences in the FLDUSD were surveyed by Jack Schreder and Associates in 1990. The survey indicated that new single

family residences generate an average of .984 K-12 students per unit and that new multiple family units generate .750 students per unit.

f. Private School

Saint Joseph is a private, parochial school, serving grades K-8 within the City of Firebaugh. It is located at the east end of Saipan Street, near Vasquez Drive and had an October 1991 enrollment of 187 students.

g. Colleges and Universities

Firebaugh is served by the West Hills Community College District. A branch of the college is located at 1666 Saipan Street. The main campus is located in the City of Coalinga. The nearest four-year university is California State University, Fresno, located in the City of Fresno, about 35 miles southeast of Firebaugh.

h. Migrant Children Program

The Economic Opportunities Commission (EOC) finances a Headstart program for migrant children. The program operates in a church located at Highway 33 and Morris Kyle Drive.

9. MEDICAL SERVICES

There are no hospitals located in the City of Firebaugh. The nearest hospitals are in Madera, Fresno, and Dos Palos.

The Firebaugh Community Health Center, operated by the Fresno County Department of Public Health, is located on the southeast corner of P and 11th Streets. The Health Center provides primary health care services to the entire community. Primary health care services include well child exams, immunizations, physical exams for all ages, family planning, minor illness care, and the monitoring of people with chronic illness. The center is not generally equipped to handle emergency health care. The Health Center is staffed by a doctor and nurses and is open five days a week, 8 a.m. to 5 p.m.

The City is also served by the Sablan Medical Center, a private medical facility. The center is staffed by an internist and a family physician.

Ambulance services, when required, are provided by American Ambulance, out of Mendota. Mendota is located about 8 miles southeast of Firebaugh.

There are no nursing homes in the City of Firebaugh.

10. SOLID WASTE DISPOSAL

Solid waste collection in Firebaugh and Del Rio is contracted to a private disposal company, Firebaugh Disposal Service. Solid waste is collected from high density residential development (multi family projects and trailer courts) twice a week and from single family residences once a week. Solid waste collection for other uses varies with the type of use, amount of solid waste generated, and the time of the year.

The City of Firebaugh does not currently operate a curbside recycling program. The Firebaugh Disposal Service, however, operates a recycling program utilizing the solid waste which it collects. It is expected that a curbside recycling program will be instituted in the City in the foreseeable future.

The Firebaugh Disposal Service transports solid waste to the American Avenue landfill for disposal.

The City sponsors a biannual cleanup, in April and December, for disposal of weeds, brush, debris, and junk from homes and property. No concrete or tires can be disposed of during this cleanup time. Residents pile the debris at the curb and it is picked it up at no charge.

In the unincorporated areas of the community, other than Del Rio, solid waste disposal is handled by the individual property owner. About 80 percent of the property owners also contract with Firebaugh Disposal Service.

11. LIBRARY

The Fresno County Public Library operates a branch library at 1325 O Street in Firebaugh. The library has a staff of two permanent part-time employees: one librarian and one assistant. Each works 20 hours a week. The library is currently open (November 1991) 16 hours a week, over a four-day period.

The library occupies approximately 2,400 square feet of space and has about 6,000 to 7,000 volumes. There is one collection of about 150 volumes which changes every two months because it rotates among the various branches of the Fresno County Library system.

12. MUSEUM

There are no museums located in the City of Firebaugh.

13. GAS AND ELECTRICITY

Natural gas and electricity service are provided by Pacific Gas and Electric Company. This privately-owned utility company operates throughout Central

and Northern California under authority from the California Public Utilities Commission.

14. TELEPHONE SERVICE

Pacific Bell provides telephone service to Firebaugh.

15. FINDINGS

- The City's water service is provided by four wells. The City is in the process of installing one additional well, and placing a non-functioning well into operation.

- As growth occurs and the City expands, agricultural lands in the surrounding water districts will be lost to urbanization. Concomitantly, demand for irrigation water would be reduced while the demand for domestic water would be increased. The City has an adequate water supply to meet foreseeable demands.

- The City's sewage treatment plant is presently operating at about 60 percent of its total capacity.

- The City evaporates its treated sewage in ponds. Some wastewater is also disposed of through spray irrigation (this wastewater receives some treatment at its origination site and does not go through the City's evaporation pond system).

- No part of the City is located in a floodplain.

- The City's storm drainage system in the past has relied on gravity flow into the San Joaquin River and pumping into the canal system. Storm drainage for future development will be through a ponding basin system.

- The Firebaugh Police Department has eight sworn officers as of October 1991. Response time for all calls is about two minutes.

- The Firebaugh Fire Department is a volunteer fire department, with a paid fire chief. The City maintains an ISO rating of 6 within the City. The ISO rating in the unincorporated area of the Sphere of Influence is 9.

- The Firebaugh-Las Deltas Unified School District operates four schools, covering a range of students in grades K-12, and a continuation high school. Although the schools are not presently impacted, future growth may require year-round schedules or the provision of additional classrooms.

- The City has no hospital. Medical care for many citizens is provided through the Firebaugh Community Health Center.
- Solid waste collection services for the City are provided by a private company. How often solid waste is collected varies with the type of use. Solid waste is transported to the American Avenue Landfill for disposal.

SOURCES CONSULTED

Austin, Glenda, Assistant City Manager, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Bier, Ardith, Clinical Services, Division Manager, Fresno County Department of Health. Telephone Interview. November 1991.

Borboa, John G., Fire Chief, Volunteer Fire Department, City of Firebaugh. Telephone Interview. October 1991.

Durham, Keyth, City Manager, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Griffith, Bruce, Superintendent, Firebaugh-Las Deltas Unified School District. Personal and Telephone Interviews. May and November 1991.

Houk, Pat, Librarian, Firebaugh Branch, Fresno County Public Library. Telephone Interview. October 1991.

Lake, Rod, Police Chief, Police Department, City of Firebaugh. Telephone Interview. October 1991.

Perkins, Terry, Owner, Firebaugh Disposal Service. Telephone Interview. October 1991.

Porter, Mike, Manager, Central California Irrigation District. Telephone Interview. November 1991.

Rabe and Associates. *Firebaugh Five-Year Capital Improvement Program.* 1991.

Rabe, Fred, City Engineer, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Schreder, Jack and Associates. *Firebaugh-Las Deltas Unified School District Draft Facilities Plan.* May 1991.

NATURAL RESOURCES

1. INTRODUCTION

The natural resources of a city contribute much to the quality of life of its citizens. The proper utilization and protection of the resources should be a major consideration in all development plans. The following sections analyze the City's water, soils, air, vegetation and wildlife, and mineral resources.

2. WATER RESOURCES

a. Introduction

No issue is more critical to the current and future well being of the City than water. Water is essential to all elements of the City's development, including housing, commerce, industry, agriculture, and recreation. The quantity and quality of water affects not only the City's human inhabitants but also its vegetation and wildlife. An adequate supply of undegraded water is necessary for the maintenance of high quality fish and wildlife habitats.

The City is bounded on the east by the San Joaquin River and on the west by the CCID Outside Canal. The Poso Canal runs through the northern portion of the City and the Outside, Main, and Delta-Mendota Canals run through the southern portion of the City. An approximately 72-acre, man-made lake, Lake Joallan, is located in the southern portion of the City. These water resources are shown on Figure VII-1.

Firebaugh receives its potable water supply from the underlying groundwater basin.

b. Precipitation

Firebaugh's climate is relatively dry and mild in the winter and hot in the summer. Nearly 90 percent of the annual precipitation falls in the six months between November and April. The mean annual rainfall is about 8.27 inches. Relative humidity readings of 15 percent are common on summer afternoons, and readings as low as 8 percent have been recorded. In contrast to this, humidity readings average 90 percent during the morning hours of December and January. Average monthly temperatures range from 45.3°F in January to 80.6°F in July. Summer weather is consistently very warm, with maximum temperatures greater than or equal to 90°F occurring about 107 days per year. Temperatures of 32°F and below occur about 27 days per year.

c. San Joaquin River

The San Joaquin River provides water for agriculture, industry, and contact and non-contact water recreation. The river also provides freshwater habitat for fish spawning grounds and migration routes; riparian habitat; and water supply for wildlife.

The watershed of the San Joaquin River is the southern San Joaquin Valley, which encompasses 11,000 square miles, extending west from the Sierra Nevada crest to the Coast Ranges and south from the San Joaquin Delta to the drainage dividing the San Joaquin and Kings Rivers. Principal tributaries of the San Joaquin River include the Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. All of these rivers are regulated by reservoirs. Bear Creek is also a principal tributary of the San Joaquin River. Bear Creek is not currently regulated by a reservoir but is scheduled to be dammed within the next five years.

The main stem of the San Joaquin River originates in the Sierra Nevada and flows westerly to Millerton Lake, which is impounded by Friant Dam. Releases in the San Joaquin system flow north toward Stockton. At Friant Dam, a major portion of the flow is diverted into the Central Valley Project canal system operated by the U. S. Bureau of Reclamation (USBR).

Streamflow in the San Joaquin River below Mendota Dam (upstream from Firebaugh) averaged about 7,990 cubic feet per second (cfs) in 1990. Streamflow varies considerably as the year progresses. In 1990, the highest flow was 18,364 cfs in July and the lowest was 97 cfs in December.

The nearest downstream streamflow gaging station is approximately 40-50 miles downstream from Firebaugh near Stevinson. Because water is diverted from the San Joaquin River downstream from Firebaugh, there is a very low streamflow at this gaging station.

d. San Joaquin River Water Quality

Water in the San Joaquin River originates as melting snow in the high elevations of the Sierra Nevada Mountains. At its point of origin, the water is of high quality. Dissolved salts and nutrients in agricultural return flows, along with seepage from municipal and industrial percolation ponds, however, degrade the water quality as the river passes through the San Joaquin Valley floor.

Every two years, the State Water Resources Control Board (SWRCB) prepares an assessment of water quality of California streams and lakes. This assessment is based on data collected by several agencies including the SWRCB, the State Regional Water Quality Control Board, the State Department of Fish and Game,

RECREATIONAL AND CULTURAL RESOURCES

1. INTRODUCTION

The City of Firebaugh has a number of recreational resources which take several forms. They range from open space along the San Joaquin River to City parks and school playgrounds. These resources are described in Subsection 2. Cultural resources in the City are described in Subsection 3, while historical and archaeological resources are described in Subsection 4.

In preparing Subsection 4, the Southern San Joaquin Valley Archaeology Information Center was contacted for information regarding cultural resources in the area, and previous cultural resource field survey reports prepared for sites within the project area were reviewed. Numerous published sources and many public agencies and individuals involved in cultural, historical, and archaeological resources in the Firebaugh area were consulted in preparing this chapter.

2. PARKS AND RECREATION

a. Facilities

The City of Firebaugh has two developed parks, totaling 20.2 acres, and one 23.9-acre undeveloped park. The locations of the parks are shown on Figure V-1 (Public and Quasi Public Facilities) and the facilities on each one are described below.

Firebaugh City Park. This park is located on an approximately 13.6-acre site on the southeast corner of 15th and Q Streets. The park has a playground area, horseshoe pits, a basketball court, barbecues, picnic tables, a permanent stage and portable bleachers, drinking fountains, restrooms, a lighted and covered group picnic area, and an unlighted, uncovered group picnic area. The Firebaugh Chamber of Commerce office and a Boy Scouts Organization office occupy small buildings on the southwest corner of the park. Also located on approximately five acres of the Firebaugh City Park is Dunkle Field. Dunkle Field is a lighted baseball/softball facility with covered bleachers. The field is used by Little League, Babe Ruth, and men's softball teams.

Maldonado Park. This park is located on the southeast corner of Clyde Fannon Road and Thomas Conboy Avenue. This 6.65-acre park is developed with a lighted baseball/softball field, a three-quarter court basketball court, turf, and a

few trees. The Firebaugh Senior Citizen Building is located on the Clyde Fannon Road frontage of the site.

Andrew Firebaugh Park. This historical park is located on the north side of 13th Street, between the Q Street alignment and the San Joaquin River. The western ends of the Firebaugh Ferry and the Firebaugh drawbridge, two significant factors in Firebaugh's history, were located in this area. The only remains related to these historic sites are two cement posts on the bank and one post in the river. The 23.9-acre site is undeveloped with two exceptions: a small PG&E power relay station and a recently installed irrigation system and row of trees along the 13th Street frontage.

In addition to these sites, the City owns substantial undeveloped land along the San Joaquin River which is designated for open space. Although it is not developed as parkland, it is available for passive recreational purposes.

Other recreational facilities are available on Firebaugh-Las Deltas Unified School District school sites. These include:

Firebaugh High School. The high school has a swimming pool, baseball and softball fields, tennis courts, hardball courts, and basketball courts, all of which are generally accessible to the public during non-school hours.

Mills Intermediate School. The intermediate school has softball fields, playground equipment, and basketball courts.

Bailey Primary School. This school has several playground areas with playground equipment, softball fields, and tennis courts.

Firebaugh Junior High School. This school has two softball fields, a track, a soccer/football field, and several half-court basketball courts.

Firebaugh has a ratio of 4.2 acres of developed park land to 1,000 population (not including school sites). Under the Quimby Act (California Government Code 66477 et seq.), local governments may require dedication of 3.0 acres per 1,000 population. If the existing park area exceeds this limit, as is the case in Firebaugh, the local government can require dedication of land up to the existing ratio, or in Firebaugh's case, up to 4.2 acres per 1,000 population. The maximum which can be required, even if the existing ratio of park land to population is higher, is 5 acres per 1,000 population.

The City currently requires new development to pay park in-lieu fees for the development of the existing parks.

b. Recreation

There are few formal recreation programs in Firebaugh. Swimming lessons are available in the summer. Little League, Babe Ruth, and men's baseball teams are active in the spring and summer.

c. Senior Citizens

The senior citizen building is located on the west end of Maldonado Park, adjacent to Clyde Fannon Road. The Firebaugh Senior Citizens sponsor several bus trips each year to various localities in the state. As a group, the senior citizens participate in three major events: an annual sidewalk sale, a Holiday Festival in November, and the City's annual Cantaloupe Festival.

3. CULTURAL EVENTS

The largest cultural event in Firebaugh is the annual Cantaloupe Festival. This is a community-wide event held in August of each year.

An annual holiday festival sponsored by a local service group is also held in late November of each year. The festival features a craft fair, parade, and children's activities.

4. CULTURAL RESOURCES

a. Introduction

The purpose of this subsection is to provide a brief overview of the periods of human habitation in the project vicinity and the research that has been conducted in the area as of 1991. The overall objective of recording cultural resources is to facilitate their conservation by avoidance, incorporation into project plans, and/or active preservation or restoration.

Cultural resources specialists (archaeologists, historians, architectural historians) evaluate cultural resources using appropriate federal, state, and local criteria. These include the age and physical integrity of the resource, the impact of the associated persons or historical events, and the interpretive value or research potential of the physical remains. Public involvement is an important part of the process—comments are requested during preparation of environmental reports and at public hearings.

Historic buildings and structures are only the most obvious cultural resources included under preservation laws. If there are little or no physical remains evident on the surface of the property but the location of an event or place important in the history of an area can be established, then a "site" is recorded and may be nominated for local, state, or national registers of historic places.

This marks the spot for the community at large to remember, to protect the property from destruction, for future generations to appreciate, and for research purposes.

Scientific advances in detection, dating techniques, and preservation allow for the recovery of important information about the paleo-environment, climatic changes, and human adaptation to the natural world. Practical applications have been made from these archaeological and historical research efforts in the areas of education, public health, and business.

b. Pre-history

Probably half of the project area was underwater for at least part of the year during the cooler climatic intervals of the past. A wide expanse of land on both sides of the present San Joaquin River and Fresno Slough was once a vast swamp, fed by winter rains and spring-summer runoff from the Sierra Nevada snowpack. "In some places the tule growth alone was twenty miles in width" (Figure VI-1).

The edges of the marshlands and the nearby grasslands were ideal hunting grounds for the Paleo-Indian people who lived in the San Joaquin Valley approximately 8,000 years ago.[1]

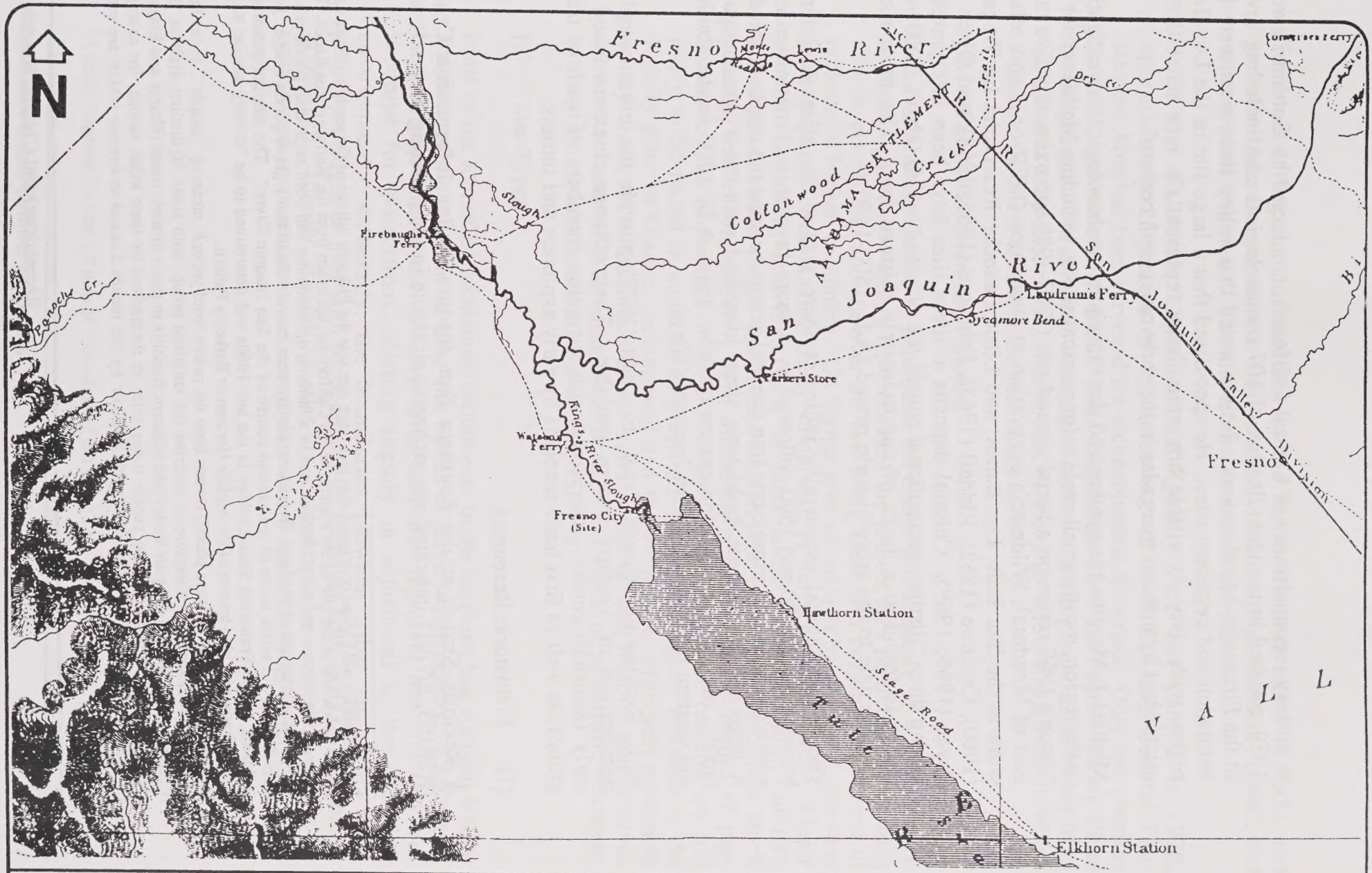
The marsh supported an extraordinary amount of wildlife including grizzly bears, herds of deer, antelope and tule elk, migratory ducks and geese, beavers, raccoons, jackrabbits, ground squirrels, and quail. The waters teemed with fish, turtles, and freshwater mussels.

The Western Pluvial Lakes Tradition has been identified throughout western North America. It is characterized by site locations on or near the shores of lakes, marshes, or streams; hunting of various mammals and birds; and the collecting and gathering of plants. The assemblage has a developed, flaked-stone tool industry characterized by percussion-flaked foliate [leaf-shaped] knives or points. Few ground-stone artifacts such as millingstones have been found in association with this complex, indicating that seeds and acorns were not an important part of the diet. The origins of these people are unknown, but the similarity in tool types and economy over a wide region suggests they share a common ancestor.[2]

---

[1]In the northern San Joaquin Valley, the oldest prehistoric components have been found in former marshlands, now hardened clay, as far as 2 km [1.24 miles] from modern river courses. Excavations at Buena Vista Lake in Kern County found a "deeply buried component related to the Western Pluvial Lakes Tradition dated to 6250 B.C.", approximately 8,000 years old.

[2]The relationship of this tradition to the Fluted-Point Tradition which has been found at big-game kill sites elsewhere in the western United States, dating to the Late Pleistocene (12,000 years ago), can only be determined by further discoveries. Current investigations at the Witt site on the former shores of Tulare Lake could help to establish the earliest date yet for human habitation in Central California.



Michael Paoli and Associates

Firebaugh's Ferry, tule swamp and stage routes, c. 1873
(State Geological Survey of California)

Figure VI-1

A cursory reconnaissance of Central California, conducted by Gordon Hewes in 1939, resulted in the identification of 107 archaeological sites including several in the Firebaugh-Mendota area. Hewes noted that valley floor sites were both habitation and cemetery sites. He speculated that a large site in the Los Banos region with sixty-six visible housepits "may represent the type of settlement established by mission renegades in the early nineteenth century".

Michael J. Moratto has synthesized the subsequent archaeological investigations in the region, mostly small-scale salvage excavations, including McAlexander and Upson's 1969 report on a burial mound site (FRE-398) approximately five miles east of Mendota[3], Wildesen's excavation at Dos Palos (MER-66), and related work at the San Luis, Los Banos, and Little Panoche Reservoirs by Treganza (1960), Crabtree (1962), Riddell (1963), Pritchard (1965; 1968), and Olsen and Payen (1966; 1969). Cultural deposits at these sites have been interpreted as having three "distinct occupational zones" the oldest of which (about 3,000 years old) was found at a depth of approximately thirteen feet. The most recent deposits date to the proto-historic period (A.D. 1500-1850).

The archaeological record also indicates there was a dry climatic interval between A.D. 1000 and 1500 followed by a more favorable climatic period in which the bow-and-arrow came into use and acorns became the staple of the diet. A large number of Late Prehistoric sites, identified with the Yokuts language family, indicate a population expansion after about A.D. 1500 in the southern and western portions of the San Joaquin Valley.

A. L. Kroeber (1976) and Frank F. Latta (1977) provide the most complete descriptions of Yokuts[4] culture available. Their ethnographies are based on early twentieth century interviews with surviving members of various tribal groups, as well as first hand accounts by early explorers and settlers.

(1) Prehistoric Resources

A Records Search at the Southern San Joaquin Valley Information Center (RS#165, 6/7/91) indicated one archaeological site in the planning area. It was

---

[3]McAlexander and Upson concluded that this large site was the Pitkachi village of Gewachiu. Frank Latta placed Gewacheu at the site of the Rancho de los Californios, upstream from the Herminghaus Ranch. The site was destroyed in the early 1960s as part of a farming operation but had been excavated previously by Marvin McAlexander of Madera. Over thirty burials were recovered and many grave goods from a "large mound about 1.3 miles south of the present course of the San Joaquin River." The site collection was evaluated at San Francisco State College in the late 1960s and determined to be "closely similar to the Emery Tradition", also known as the Middle Horizon or Berkeley Pattern.

[4]The name "Yokuts" (always plural) comes from the native word *yococh*, meaning "people". It has been used in the ethnographic literature to describe the language group, with some 50 distinct dialects, that occupied the entire San Joaquin Valley and adjacent foothills in proto-historic times (Heizer and Elsasser 1980:16). Descendants of these people today refer to themselves by their tribal names, for example Choinumni, Chukchansi, Tachi, or Wukchumne, or by the names *Yococh* or *Inyana* which are more inclusive.

reported during the construction of the Delta-Mendota canal in 1951 and contained human bone from at least two individuals, a large obsidian "point", and other artifact fragments. The site is now under water.

Since the California Environmental Quality Act was passed in 1970, approximately 25 percent or 855 acres out of the 5,406-acre General Plan Review Area has been surveyed for archaeological resources. Only one possible artifact[5], and several "historic" bone fragments were discovered during these investigations. These results were attributed to historic ground disturbance from agricultural activities, canal construction, debris, and "a few small areas in which a dense crop-cover inhibited the reconnaissance".

(2) Future Research and Planning

More data are necessary to determine the extent and antiquity of human history in Firebaugh. Flood waters have covered the project area periodically, washing new layers of sand and silt over the low lying areas and burying the record of prehistoric human habitation. On higher ground, erosion by wind and rain may have exposed sites making them vulnerable to surface disturbance. Major ground disturbing activities such as land leveling for farming, building construction, roads, canals and levees, human relic collecting, vandalism, stock grazing, and rodent activity, have undoubtedly destroyed the record of past human activity in portions of the project area. But, sub-surface remains are still likely to be found in some areas given the known ecological richness of the vicinity prior to historic development and the prehistoric settlement pattern in nearby areas. A combination of sub-surface testing, oral history, and archival research are needed to determine the location and extent of prehistoric resources in the planning area in addition to surface surveys.

(3) Site-Types

Most of the identified prehistoric settlements in the northern San Joaquin Valley are on low mounds, on or near the banks of large watercourses. Clusters of large village sites occur in some areas and may represent one site that was occupied for generations, shifting slightly in adjustment to the changing environment. Generally, the boundaries between tribal territories were prominent ridges or hills with occupation sites spanning both sides of the streams in between. Smaller, special-use sites are located near lesser stream courses or springs and represent seasonal camp sites where specific plants or animals were exploited.

[5] A pestle fragment 22.5cm x 7.6cm of "consolidated sandstone".

(4) Most Sensitive Areas

The central and southern portions of the planning area, within approximately a mile and a half of the river, are probably the most sensitive, that is, most likely to have prehistoric resources. Undeveloped areas and parcels that have been subject to only minor surface disturbance are the most likely to yield surface remains. The downtown Firebaugh area and school yards along the river are highly sensitive based on the available data. Identified ethnographic sites on the Madera County side of the river may also have components on the Fresno County side of the river.

(5) Other Cultural Values

Other cultural values must be considered during project planning including "religious, ceremonial and sacred sites, and natural locations with such significance or with food/fibre resources important to Native Americans" (Advisory Council on Historic Preservation). The federal regulations further state "when an undertaking may affect properties of historic value to an Indian tribe on non-Indian lands, the consulting parties shall afford such tribe the opportunity to participate as interested persons."

Native American burial grounds are protected by federal and state laws. The County Coroner and the Native American Heritage Commission must be notified immediately if any human remains are discovered. Although there are no known descendants of the aboriginal tribe that lived in the immediate vicinity of Firebaugh, descendants of the closely related people from the surrounding valley and foothill areas represent them in these matters.

The Native American Heritage Commission was consulted concerning the Firebaugh General Plan area (September 17, 1991). There are no listings in the Sacred Lands Inventory for this area but this does not mean there are no resources of this kind in the vicinity. One of the Most Likely Descendants for Fresno County, Lorrie Planas, was also consulted about the Firebaugh area. She did not know of any sensitive properties in the area, nor did Don Wren. Lack of specific knowledge about the area, however, does not mean lack of resources.

c. Ethno-history

(1) Military, Missionaries, and Indians

Pedro Fages of the Spanish Cavalry was among the first to leave a written account of the San Joaquin Valley. In 1772, Fages wrote in his diary "this plain...is a labyrinth of lakes and tulares". It was the dense growth of tules along the rivers that led the Spanish to name the region *Valle de los Tulares*.

In 1806, Gabriel Moraga and a party of twenty-five men entered the San Joaquin Valley in search of an inland mission site and runaway "neophytes", as the baptized Indians were called. They reached the San Jo. quin River a few miles north of Firebaugh and reported "there was much good land to the south, but some alkali; plenty of beaver and salmon".

Frank Latta's *Handbook of Yokuts Indians* (1977) includes Franciscan missionaries, Juan Crespi and Pedro Font, and Spanish Captain Juan Bautista de Anza's descriptions of the natural and cultural environment of the San Joaquin Valley in the late eighteenth century. Among other practices, they noted that the Indians cooked salmon in pits on the banks of the San Joaquin River, used rafts made of tule reeds to travel on the sloughs, and built mounds on the islands and slough banks to raise the level of their houses above flood water.

The native people of California were brutalized and decimated under Spanish and Mexican rule. Incidents of villages being raided and men, women, and children being lassoed like cattle, their ears clipped to brand them, are common. Often the Mexican vaqueros, who had come to the area to capture wild horses for a living, helped round up the Indians in their area and delivered them to the missions. The ones who resisted capture were killed. Some escaped only to die later of disease or starvation. Between 1769 and 1834, the number of California Indians were reduced from approximately 300,000 to 100,000.

There was some retaliation by the Indians and horse stealing from mission herds became commonplace. The resulting wars of extermination, by Mexican- and American-led groups, reduced the California Indian population to about 58,000 by 1870.

(2) Fur Trappers

Jedediah Strong Smith lead a party of American beaver trappers overland to California in 1826, effectively opening up the west for fur trade. From 1832 to 1845, the Southern Trapping Party of the Hudson Bay Company, comprised of small parties of Canadians and Indians with their wives, spent the winters hunting for beavers up and down the San Joaquin Valley. They rendezvoused at French Camp, south of present-day Stockton.

In 1832, J. J. Warner of the Ewing-Young party noted there were Indian villages all along the San Joaquin River "from the base of the mountains down to, and some distance below the great slough". On his return trip the next year he found the Valley deserted, skeletons everywhere:

> Only at the mouth of the Kings River did they find a live village [Kahwahchu?], which 'contained a large number of Indians temporarily stopping at that place'. During one night in that

village, a score of persons died, demonstrating that the epidemic was still rampant."[6]

Pahmit, an aged Dumna Yokuts from the Friant area, recalled the history of the west side people as told to him by Sopahno. Sopahno was born around 1800 at a village on Los Banos Creek. He was captured as a teenager and taken to Mission San Juan Bautista. When he returned to the area as an adult, he was dismayed to find his village deserted but relieved when he found people who spoke his language fishing on the San Joaquin River. Sopahno recalled an Indian village where Fish Slough, China Slough, and the San Joaquin River meet. The place name *Kahwahchu*, meaning "grass nut place", was a tribal name too, according to Pahmit's account:.

> "Sopahno say his tribe name Kah-watch-wah. They live on the west side San Joaquin River, from below Firebaugh 'bout five mile down, to north [of] Los Banos town, from Panoche north [to] San Luis Ranch. San Luis Creek all belong Kahwatchwah. Their home villages both on Los Banos Creek, one [at] hills and one [at] San Joaquin River".

(3) Las Juntas

In the early 1800s, the pueblo of Las Juntas (the meeting place or junction) was established on the south bank of the San Joaquin River at the Indian village of *Kahwahchu*.[7] Las Juntas was inhabited by soldiers from San Juan Bautista who intermarried with the Indians. After the defeat of Spain by Mexico in 1821, Mexican vaqueros and a few South American families came to Las Juntas by way of the old road from Los Angeles (El Camino Viejo). In the 1870s the population of Las Juntas was about 250.[8]

---

[6]The type of epidemic that occurred in 1833 is unknown. A physician, Dr. E. W. Twitchell, studied the Warner and Yount accounts and the geography of the epidemic and ruled out malaria, smallpox, and measles. He "admitted the possibility of cholera and typhus" but without detailed descriptions of the victims' symptoms he could not pinpoint the disease. Probably half of the native population perished, the rest scattered to the hills.

[7]Pahmit's account states that Sophano told him the village Kawahchu was "right where they had that Mexican town, Las Juntas, just where Fish Slough, China Slough and Joaquin River go together. White people put big dam there in San Joaquin River". In 1868, Henry Miller built a brush and earthen filled dam or weir to divert water from the San Joaquin River into irrigation canals. This was later replaced with a timber dam and in 1910, a concrete dam was constructed, presumably at the same location. Thus, Sopahno placed Kahwahchu and Las Juntas at the Mendota Dam, approximately three miles southeast of the planning area boundary.

[8]The Spanish-speaking people who were born in California called themselves *Californianos* to differentiate themselves from the Mexican-born immigrants. Thus, *Rancho de los Californianos* became the name for the community located about five miles upstream from Las Juntas on the San Joaquin River. A stockade was built around this settlement to protect it from marauders. Remnants of the ditch with twelve-foot high log walls remained visible until 1883 and some of the ruins of the buildings were still there in the 1920s.

(4) Firebaugh

By 1850, gold miners began to explore the Southern Mines. The first to arrive were Mexicans from Sonora, Chilians, and a few Chinese. The need for a river crossing where the trail from the Central Coast reached the San Joaquin River led to the first historic site in the project area.[9] Alexis Godey, a hunter for John C. Fremont, reportedly had a ferry on the San Joaquin River as early as 1850, according to a map of that year by C. D. Gibbes. Another account states that two men named Stone and Waters ran a ferry here in 1852. By all accounts, it was in 1854 that Andrew D. Firebaugh took over the ferry operation and the spot became widely known as Firebaugh's Ferry.

Andrew D. Firebaugh was the seventh child of John Firebaugh and Elizabeth Whitmore. He was born September 29, 1823 in Virginia. His great grandparents had immigrated to Pennsylvania from Germany in 1744.[10] Andrew D. Firebaugh came to California by way of Texas and military service in the Mexican-American War. He joined the Mariposa Battalion in 1851, and afterward stayed in the area as a cattle herder. Beginning in 1854, he ran the ferry service across the San Joaquin River and in 1855 he was granted a permit to build a toll road over Pacheco Pass[11]. When Fresno County was established out of portions of Mariposa, Merced, and Tulare Counties in 1856, Firebaugh applied for a merchant's license at the new county seat in Millerton. The Pacheco Pass road was completed in 1857 along an old trail route. Soon afterward, Firebaugh left the area, and when he returned in the 1860s with a wife, they settled in the foothills along Sycamore Creek, and helped to found the first secondary school in the area at Academy in 1872.

Waterman L. Ormsby was the only through passenger on the first westbound stage of the Butterfield Overland Mail in 1858. His account of the Firebaugh stop includes this description:

> "The road along the river is excellent, passing through some fine land, though no settlements, except the station ranches, the owners of which own large herds of cattle, which we saw grazing on the plain or winding their way to the river for water. There is no timber on the plain, but some on the banks of the river".

---

[9]There was probably an Indian village at his location judging from the pattern of Las Juntas, Rancho de los Californianos, and other early meztizo settlements, and the number of recorded archaeological sites above and below this point on the river.

[10]The branch of the family that moved to Virginia changed the spelling of their name from Feuerbach to Firebaugh.

[11]An article in the *Fresno Bee* by Joe Thome, dated 8/22/77, (available at the Henry Madden Library Special Collection Department in June English's Firebaugh file), further describes the building of the road over Pacheco Pass and the "many bits of historical reminders" along the route.

The Butterfield stage road did not cross the river but followed along its western bank, north to Poso Farm and then to Temple's Ranch "the next station thirteen miles northwest of Firebaugh".

> "In 1858, the settlement of Firebaugh's Ferry comprised but a small group of buildings situated on what is now a vacant tract of land a short distance south of the present [1947] school building. This consisted of two or three houses, a rough frame and adobe building which served as a hotel, a post-office and general store, in the rear of which were stable buildings and a blacksmith shop. This later was made the Butterfield station. There was also a warehouse near the ferry and a steamboat landing which was located a short distance down the river from the present bridge. The ferry boat was a large flat boat operated by means of a cable stretched across the river. On the opposite side of the river there was an inn or ranch house....

The great flood of 1862 apparently wiped out all of these buildings. The ferry operation was soon started again and operated under various owners until 1885 when the County built a steel drawbridge across the river.

Henry Miller and his partner Charles Lux began acquiring land on the west side of the San Joaquin Valley in the early 1860s. Their headquarters were at the Rancho Santa Rita near Los Banos with branch headquarters at Santa Rita Ranch in Dos Palos and the New Columbia Ranch in Firebaugh. They employed 240 men, "40 of whom were Indians", to tend their vast herds of cattle and sheep, and they organized camps of Mexican, Chinese, and American laborers to build a system of irrigation canals allowing the dry plains around Firebaugh to become productive farm lands. Grains, alfalfa, grapes, and other fruits were grown during these early years of farming[12].

In 1875, Charles Kahn and Jacob Myer ran the Firebaugh Ferry, and a hotel and general store. The population of the town was about 25. There was regular mail and stage service and two saloons, run by Jesus Bernal and Joaquin Cabrera. Steamers plied the waters of the San Joaquin River from Stockton to Sycamore Point, above Herndon, stopping at Firebaugh to load hides and wool from the Miller & Lux ranch. In 1879, the San Joaquin and Kings River Canal Company bought out the land around Las Juntas and forced the residents to vacate. Induced by Myer's offer of $1-town lots, 200 people moved from Las Juntas to Firebaugh.

---

[12]Cotton did not become a major crop in the area until the late 1920s and early 1930s when other crops became unprofitable and ginning companies (Producers Cotton Oil Company, Anderson-Clayton Company) and a marketing cooperative (California Cotton Cooperative Association) offered loans that banks were unable to offer in those years.

Firebaugh was a trading and sheep shearing center in the late 1870s. About 150,000 sheep from some 50 different ranches were shorn at the first public corral in Firebaugh in 1876.

The Tiburcio Vasquez gang raided Firebaugh in 1873, stealing the $30,000 payroll for Henry Miller's ranch workers at George L. Hoffman's store, and $600 from the Wells Fargo stage, before they retreated to their Cantua hideout.

In 1889, the Pacific Improvement Company bought property in Firebaugh from Miller & Lux and sold lots to Daniel Belli, Louis Puccinelli, Issac Myer, A. G. Leverone, E. Barboa, and Nick Fabris. Miller & Lux built a two-story brick building that housed a general store and the Bank of Firebaugh in 1906.

In 1890, the Southern Pacific Railroad line through Firebaugh was completed and the first train rolled into town on Christmas Eve. There was a three-day community celebration. Firebaugh had a reputation as a rough and lawless place, so when the railroad decided they needed a new station in the area they by-passed Firebaugh and established the town of Mendota (see Figure VI-2).

In 1895, Miller & Lux built an irrigation canal along N Street. Affordable land and irrigation improvements continued to attract immigrants to the area after the turn of the century:

> "many farmers came to the Firebaugh area hoping to make it big on forty or eighty acres...Some bought lands just west of a Standard Oil pumping station that had been built around 1908 midway between Firebaugh and Mendota. It was named Las Deltas".

Firebaugh was incorporated as a city in 1914, with a population of 700, and the fight began: the fight to chase out the rattlesnakes, the tarantulas, and the lawless...

> "The fight to save the land from the elements. The fight to obtain water. The fight for the school. Some...withdrew, selling their land as they went," wrote Domenic Biancucci who settled in the area in 1921.

James M. Cardella has written a history of the Las Deltas area based on interviews with many pioneers; included are stories about water problems and land agents' broken promises.

A small cemetery located near the intersection of the Southern Pacific Railroad and the Outside Canal was identified by the Fresno County Historical Society in 1974 as historic and worthy of preservation. Smith, Brewer, and Powell reported a cemetery "just west of the railroad tracks and south of the *Main* [Outside] Canal" was leveled by the City in 1981. This cemetery was established around 1920 by Amedeo Landucci and Pompelio Giomi, according to articles that appeared in the *Fresno Bee* and historians' interviews with local residents. There are no listings for Firebaugh in the 1985 inventory of historic cemeteries on file at the Fresno Historical Society.

As noted above, the partial remains of the 1885 steel drawbridge remain standing in the San Joaquin River. This structure should be considered for County landmark status.

One historic building built of redwood in the 1890s, the *Hotel El Capitano*, remains standing at the corner of 10th and O Streets. The exterior has been altered but it could possibly be restored.

The Roy Elms, Jimmie Biancucci, V. C. Britton, and Sam Biancucci buildings in Firebaugh were built by the Taylor-Wheeler contracting partnership which was formed in 1927 and employed architect Allen C. Collins in 1936. The Taylor-Wheeler firm is one of the ones honored in a recent exhibit of architectural drawings at the Special Collections Department, Henry Madden Library, CSU, Fresno.

The bid opening for construction of the new city hall and fire station at 11th and P Streets was announced Christmas Day 1940. The architect for the project was E. W. Peterson of Fresno. This building is old enough to be considered a historic resource and it should be evaluated by an architectural historian.

The population of Firebaugh in 1956, the centennial year for the County, was estimated to be 2,000. In 1991, the City's population had grown to 4,770, making it one of the fastest growing cities in California.

d. Management Considerations

Fires, floods, and demolition have destroyed some of Firebaugh's historic resources. A historic resource survey needs to be conducted to determine what resources remain, and what could be restored. An article entitled "Firebaugh Residents are Beginning to Save their History" appeared in the *Fresno Bee* November 17, 1988. The results of local efforts to document and preserve the past need to be shared with local research repositories (The Fresno County Historical Society, Fresno County Free Library, and CSU, Fresno's Department of Special Collections at the Henry Madden Library) to aid research and conservation efforts. Precise descriptions of resource locations should be provided, preferably with USGS map references, whenever possible. The

Historic Landmarks and Records Advisory Commission should be contacted if a specific structure or building needs evaluation or to make a nomination to the Fresno County Landmarks list.

For prehistoric site locations, the Southern San Joaquin Valley Archaeological Information Center at California State University, Bakersfield should be contacted. They are the regional repository for information and site records regarding prehistoric and historic archaeological sites for the State Office of Historic Preservation. Archaeological site locations are kept confidential to protect them from vandalism and looting. Only qualified archaeologists, cultural resources specialists, and the Most Likely Descendants designated by the Native American Heritage Commission should be allowed access to prehistoric site location information.

5. FINDINGS

- Firebaugh currently has about 44.1 acres of park land. The City has been collecting park-in-lieu fees to provide additional equipment and facilities in the parks.

- Firebaugh currently has 4.2 acres of park land per 1,000 residents.

- The annual Cantaloupe Festival is the City's largest cultural event, drawing residents from Firebaugh and the surrounding area to the various activities.

- Firebaugh's history began in approximately 1854, when Andrew D. Firebaugh took over a ferry operation on the San Joaquin River.

- No buildings or sites in Firebaugh are listed in the State Inventory of Historic Places. One site, the Firebaugh Ferry on the San Joaquin River, is on the Fresno County Historic Landmarks List.

- Much of the SOI has not been surveyed to determine if surface or subsurface resources are in the area.

RECREATION SOURCES CONSULTED

Austin, Glenda, Assistant City Manager, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Durham, Keyth, City Manager, City of Firebaugh. Personal and Telephone Interviews. January 1991-February 1992.

Griffith, Bruce, Superintendent, Firebaugh-Las Deltas Unified School District. Personal and Telephone Interviews. May and November 1991.

CULTURAL RESOURCES SOURCES CONSULTED

Austin, Glenda, Assistant City Manager, City of Firebaugh. Personal and Telephone Interviews. January through December 1991.

California, State of, Department of Parks and Recreation. *California Environmental Quality Act (CEQA). Appendix G: Significant Effects and Appendix K: Archaeological Impacts.* Sacramento: State of California. 1970.

California, State of, Office of Historic Preservation. *Survey of Surveys: A Summary of California's Historical and Architectural Surveys.* Sacramento. 1989.

Clough, Charles W. and William B. Secrest, Jr. *Fresno County: The Pioneer Years, from the Beginnings to 1900.* Fresno: Panorama West Books. 1984.

Clough, Charles W. *et al. Fresno County in the Twentieth Century.* Fresno: Panorama West Books. 1986.

Conkling, Roscoe P. and Margaret B. *The Butterfield Overland Mail 1857-1869,* Vol. II. Glendale: The Arthur H. Clark Company. 1947.

Consultive Planners. *Firebaugh General Plan 1973: A Community Development Plan for Firebaugh, California to the Year 1995.* Prepared for the City of Firebaugh. 1973.

Cook, Sherburne F. *The Conflict Between the California Indian and White Civilization.* Berkeley and Los Angeles: University of California Press. 1976.

Cramer, John D. "Firebaugh, Los Banos Among Fastest Growing". *Fresno Bee.* August 8, 1991.

Durham, Keyth, City Manager, City of Firebaugh. Personal and Telephone Interviews. January through December 1991.

Elliott, Wallace W. and Company. *History of Fresno County California, with illustrations descriptive of its scenery, farms, residences, public buildings.* San Francisco: Wallace E. Elliott & Co. 1882.

English, June. Andrew D. Firebaugh and Firebaugh's Ferry. *The Ash Tree Echo: Leaves from the Past,* Vol. 10, No. 2, April 1975. CSU, Fresno Henry Madden Library, Special Collections Department. 1975.

Fenega, Gerrit L. Archaeological Investigations at Tulare Lake. *Society for California Archaeology Newsletter*, Vol. 25, No. 5. September 1991.

Fresno City and County Historical Society Archives. Ben Walker files c.1936-1951. Fresno newspaper clippings.

Fresno County Historic Landmarks and Records Advisory Commission. *Index of Historic Properties in Fresno County.* Fresno. 1989.

Greengo, R. E. Site record form for site FRE-105. Southern San Joaquin Valley Information Center, at California State University, Bakersfield. 1951.

Griffith, Bruce, Superintendent, Firebaugh-Las Deltas Unified School District. Personal Interviews. March and November 1991.

Heizer, Robert F. and Albert B. Elsasser. *The Natural World of the California Indians.* Berkeley: University of California Press. 1980.

Hewes, Gordon W. Reconnaissance of the Central San Joaquin Valley. *American Antiquity*, Volume 2. 1941.

King, Gerald, planning consultant. "History of Firebaugh". Transcribed by June English. Fresno City and County Historical Society Archives. 1963.

King, Tom. Site record form for FRE-398. Southern San Joaquin Valley Information Center, California State University, Bakersfield. 1968.

Kroeber, A. L. *Handbook of the Indians of California.* New York: Dover Publications, Inc. 1976 edition. 1925.

Latta, Frank F. *El Camino Viejo.* Kern County Historical Society. Bakersfield: Kern County Free Library. Department of Special Collections, Woodward Collection, Henry Madden Library, CSU, Fresno. 1936.

Latta, Frank F. *Handbook of Yokuts Indians.* Santa Cruz, Bear State Books. 1977.

Merchen, Joan, Planning Consultant, City of Firebaugh. Personal Interviews. August and September 1991.

Moratto, Michael J. *California Archaeology*. Orlando: Academic Press. 1984.

Myer, Albert. Firebaugh. *Fresno County Centennial Almanac: a compendium of interesting and useful historical facts and old tales gathered to mark the 100th anniversary of the founding of Fresno County*. Fresno: Fresno County Centennial Committee. 1956.

Myer, Isaac. "Firebaugh's History is Told: Writer has lived there 50 years; future of the town is bright". *Fresno Republican Newspaper*, January 3, 1926. Fresno City and County Historical Society Archives, Ben Walker files. 1926.

Nasse, George, Professor, California State University, Fresno. Telephone Interview. September 1991.

Native American Heritage Commission (NAHC). *Preservation and Protection of Native American Remains and Associated Grave Goods*. 1988.

Ormsby, Waterman L. *The Butterfield Overland Trail*. Edited by Lyle H. Wright and Josephine M. Bynum. San Marino: The Huntington Library. 1942.

Panter, John, Archivist, Fresno City and County Historical Society. Personal and Telephone Interviews. September 1991.

Planas, Lorrie, Native American Heritage Commission Contact Person, Fresno County. Personal and Telephone Interviews. September 1991.

Powell, John E. *Out of Architectural Exile: Architectural Drawings from California's Central San Joaquin Valley, 1874-1947*. A temporary exhibit at the Department of Special Collections, Henry Madden Library, California State University, Fresno. April 20-July 20, 1990.

Rawls, James J. *Indians of California: the changing image*. Norman, Oklahoma: University of Oklahoma Press. 1984.

Sitterding, Linda, Local History Reference Librarian, Fresno County Library Main Branch. Personal and Telephone Interviews. September 1991.

Smith, Ephraim K., Chris Brewer, and John Edward Powell. *Historical Architectural Survey Report for State Route 33 Road Widening*. Prepared for CalTrans, District 6, Environmental Planning Branch, Fresno. 1989.

Smith, Ephraim, History Professor, California State University, Fresno. Telephone Interviews. September 1991.

Stuart, David R. *An Archaeological Survey of the Industrial Park Annexation, Firebaugh, California.* Prepared for Raymond Vail and Associates. Fresno: California State University, Fresno Anthropology Department. 1974.

Thompson, H. C. and A. H. West. *History of San Joaquin County, California.* 1968 edition. Berkeley: Howell North Books. 1879.

Treadway, Debra Pilas, Contact, Native American Heritage Commission. Telephone Interviews. September and October 1991.

Vail, Raymond and Associates. *Final Draft Environmental Impact Report for the Firebaugh Industrial Park Annexation.* Prepared for the City of Firebaugh, November 1974. Fair Oaks, California: Raymond Vail and Associates. 1974.

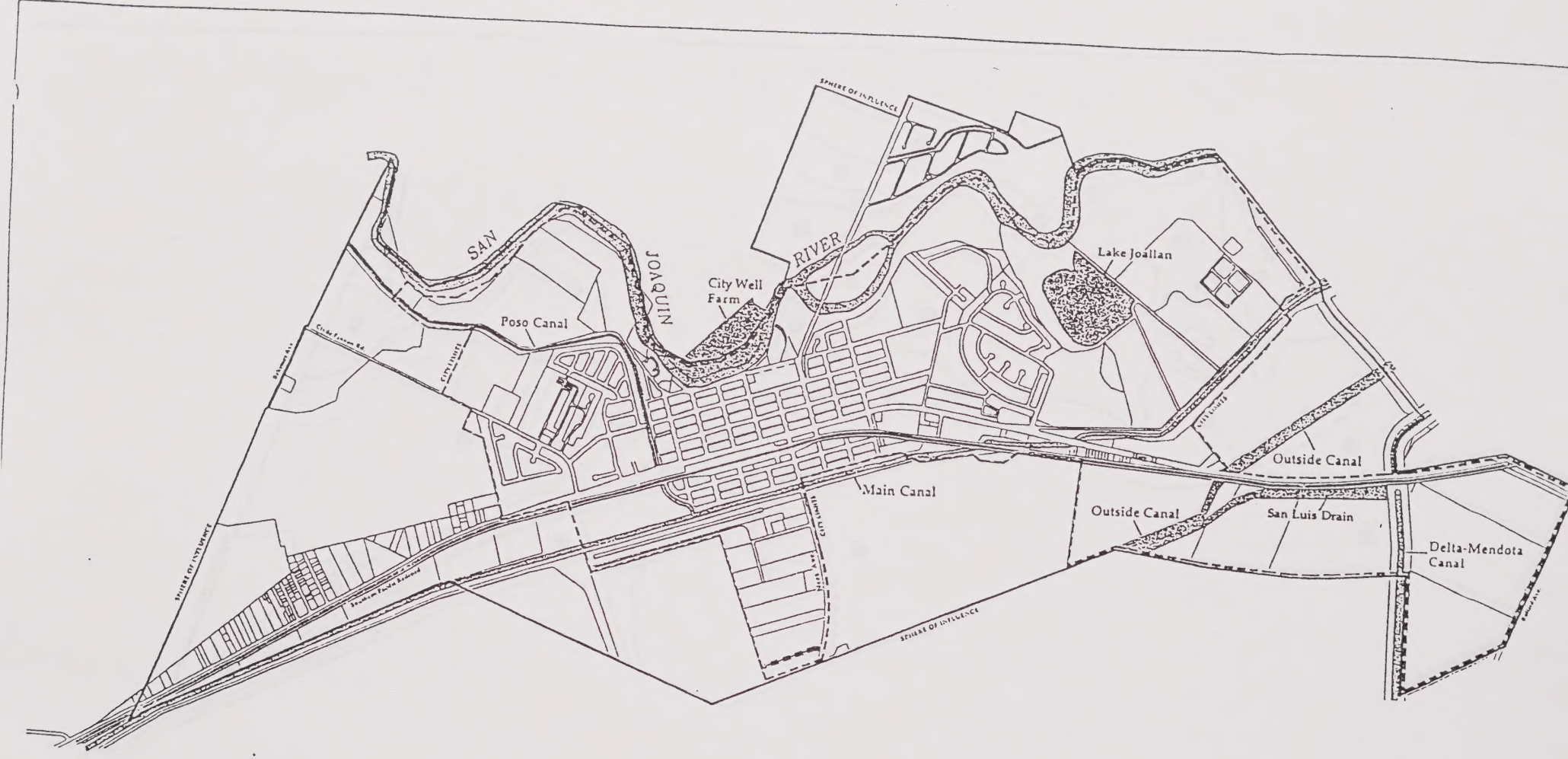
Vandor, Paul E. *History of Fresno County.* Los Angeles: Historic Record Company. 1919.

Varner, Dudley M. Letter, dated September 25, 1975, addressed to Gregory T. Merrill of Fred N. Rabe Engineering, Inc., Fresno, regarding an archaeological survey of three proposed wastewater treatment sites. Fresno. 1975.

Wallace, William J. *Northern Valley Yokuts.* Handbook of North American Indians, Vol. 8. Washington: Smithsonian Institution. 1978.

Wren, Donald G. *An Archaeological Survey for the Proposed Del Rio Subdivision Domestic Water Distribution System and Sanitary Sewer Collection System.* Prepared for the County of Fresno. Service Area No. 40. Fresno: Donald G. Wren. 1989.

Wren, Donald, Anthropology Instructor, Fresno City College. Telephone Interviews. September 1991.



N

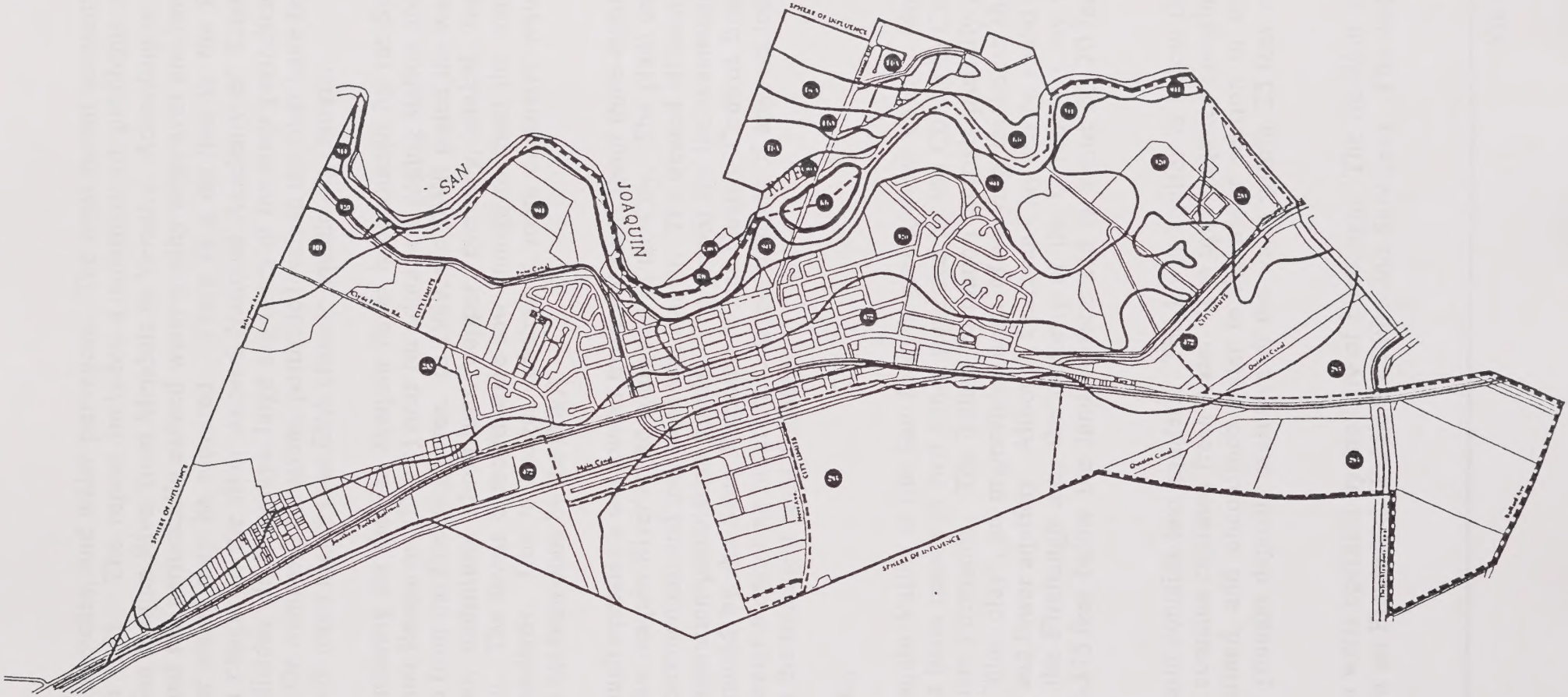
Scale: 800 ft

LEGEND

Water Resources

Water Resources

Figure VII-1



See Table VII-1 for Descriptions and Capabilities of Soils

Soils

Figure VII-2

local government agencies, and water purveyors. The most recent assessment was completed in 1991. The report includes a summary of problems and concerns for the San Joaquin River from Mendota to Vernalis. According to the report, selenium and salt periodically exceed water quality objectives and boron levels in the river water may be elevated. There is a decline in the fish population. Fish caught in the river exceed National Academy of Science guidelines for pesticides. In bioassays, large segments of the river periodically test acutely toxic. On numerous occasions, pesticide levels in the river have been documented at 20-70 times higher than EPA chronic aquatic life criteria.

Water-quality monitoring for the San Joaquin River is conducted by the State Department of Water Resources (DWR) near Mendota at a gaging station about six miles upstream from the Firebaugh area. In 1989, the DWR tested the water for arsenic, silver, cadmium, chromium, copper, mercury, nickel, lead, selenium, and zinc. The levels detected were low enough to meet the state's drinking water standards. Due to budget constraints, more extensive water-quality testing has not been done by the DWR.

The City of Firebaugh operates a wastewater treatment plant about three-eighths mile west of the San Joaquin River at the south end of the City. The plant only treats residential, commercial, and industrial wastewater. The treated effluent is disposed of in evaporation-percolation ponds. The permit for the wastewater treatment plant granted by the State Regional Water Quality Control Board includes a groundwater monitoring program to assess impacts, if any, on local groundwaters from the treatment plant discharge.

e. Groundwater

Below the San Joaquin Valley is the San Joaquin groundwater basin. Most groundwater in this basin occurs in two zones separated by the Corcoran Clay member of the Tulare Formation. The Tulare Formation consists partially of Corcoran Clay or "blue clay", an impervious layer of varying thickness that separates the upper and lower aquifers. Although Corcoran Clay can be found at various depths, in the Firebaugh area the majority of the Corcoran Clay is approximately 325-375 feet below the land surface and is about 60-70 feet thick.

The groundwater basin contains two aquifers. The lower aquifer is below the Corcoran Clay and contains confined fresh water. The upper aquifer contains confined, semi-confined, and unconfined water in the upper section of the Corcoran Clay and younger deposits exclusive of the water within 25 feet of land surface.

There are four main wells operated by the City of Firebaugh. The location of these wells is shown on Figure V-2 (Public Facilities and Services). The well

depths range from 209-335 feet and pump water from the unconfined water table above the Corcoran Clay.

The groundwater levels of the upper water-bearing zone are relatively high throughout the Firebaugh area. Groundwater levels fluctuate from season to season. The DWR maps groundwater elevations and depths in the San Joaquin Valley twice a year. On the most recently completed map, Spring of 1988, the depth to groundwater in the Firebaugh area was 10-20 feet. Primary groundwater recharge in the area is due to agricultural irrigation and the San Joaquin River. In non-drought years, groundwater withdrawal in the planning area is negligible because it is not the primary source of agricultural irrigation water.

Groundwater in the Firebaugh area has two significant problems: a shallow, or high, water table and high salinity.

The high water table has historically been the most significant problem in the Firebaugh area. This is the shallow layer of water that in high water years and during irrigation season can rise to as much as three to five feet from the land surface. This causes problems for field crops and orchards that cannot tolerate wet or saturated soils. For years this problem has been successfully mitigated by the installation and maintenance of underground tiles by individual landowners. The Central California Irrigation District (CCID) does not maintain any underground tiles. The CCID, however, monitors groundwater elevation and quality using 16-foot deep wells located at every section corner in the district.

The second groundwater problem, high salinity, often exists in areas with shallow water tables. High saline concentrations in both the groundwater and soils cannot be tolerated by most plants. In order to successfully grow crops, careful irrigation practices must be followed.

f. Groundwater Quality

The four City of Firebaugh wells are regularly tested for compliance with the *California Code of Regulations, Title 22, Domestic Water Quality and Monitoring Regulations (Title 22)*. The three oldest City wells, Nos. 3, 7, and 10, all pump water with a Total Dissolved Solids (TDS) count of approximately 900 parts-per-million (ppm). The newest City well, Well No. 11, pumps water with a TDS of approximately 350 ppm. The recommended TDS level in *Title 22* is 500 ppm with up to 1,000 ppm allowed. Occasionally Well No. 7 exceeds the *Title 22* standard for arsenic. The City's Department of Public Works blends the water from this well with the water from Well No. 11 to produce drinking water which meets the *Title 22* requirements. The City's domestic water supply does exceed the state's secondary health standards for manganese and iron. Secondary health standards regulate the odor, appearance, and taste of the water. The exceedance of

secondary standards does not constitute a health hazard to individuals drinking the water. The City operates two domestic water treatment plants that remove the iron and manganese and brings the water into compli ıce with the standards.

3. AGRICULTURAL SOILS AND RESOURCES

a. Introduction

Fresno County's economic base is dependent upon agriculture. Approximately 21,449,851 acres were harvested in the County during 1990.

The predominant use in Firebaugh's SOI, outside the urban center, is agriculture. The major crops within the SOI are cotton and rice. Tomatoes and melons are also significant crops. Some crop rotation does occur, so the acreages in each crop may vary from time to time.

In 1990, directly or indirectly, agriculture supported most industry in Firebaugh.

b. Soils

(1) Land Capability

The Soil Conservation Service (SCS) is the primary source of information concerning the suitability of soils for agricultural uses. The SCS has developed a "Land Capability Classification System" that organizes soils into eight categories designated by Roman numerals. According to the SCS, "the land capability classifications show, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management." In the system, the numerals indicate progressively greater limitations and narrower choices for practical use.

The soils in the Firebaugh area have been mapped by the SCS. Figure VII-2 shows the soil types within the City's SOI. A summary of the soil types and their land capability are located in Table VII-1. Runoff from all soils is slow or ponded. Soil permeability ranges from slow to rapid and the hazard of wind erosion is slight.

Generally, soils which are classified as Class I or Class II soils are considered to be prime agricultural soils. There are no Class I soils in the Firebaugh SOI. Although there are some Class II soils within Firebaugh's SOI, the Department of Soil Conservation has stated that none of the Class II soils on the Fresno County side of the San Joaquin River are prime agricultural soils. On the Madera County side of the river, three of the soils, encompassing the majority of

TABLE VII-1

FIREBAUGH SPHERE OF INFLUENCE
SOIL CAPABILITIES

Soil Reference	Soil Name	Rating		Typical Use
		non irrigated	irrigated	
101	Armona loam, partially drained	VIIw(17)	IIIw (17)	rangeland, wildlife habitat, irrigated crops
282	Tachi clay, 0-1 percent slopes	VIIw (MLRA-17)	IIIw-6 (MLRA-17)	wildlife habitat, recreation, irrigated crops
283	Tachi clay, fine, 0-1 percent slopes	VIIw (MLRA-17)	IIIw-6 (MLRA-17)	wildlife habitat, recreation, irrigated crops
285	Lillis clay, fine, 0-1 percent slopes	VIIw (MLRA-17)	IIIw-6 (MLRA-17)	wildlife habitat, recreation, irrigated crops
311	Bisgani loamy sand, partially drained	IVw-4 (17)	III-4 (17)	irrigated crops, some wildlife habitat
320	Elnido sandy loam, partially drained	IVw-2 (17)	IIw-2 (17)	irrigated crops, pasture, homesite dev., wildlife habitat
472	Wekoda clay, partially drained 0-1 percent slopes	IVw-5 (MLRA-17)	IIIw-5 (MLRA -17)	irrigated crops, wildlife habitat
941	Fluvaquents and Xenofluvents, channeled	VIIIw (17)	—	wildlife habitat, recreation
Rh	Riverwash	VIIIs-1	—	no agricultural value
Tba	Temple clay loam, 0-1 percent slopes	IIw-2	—	pasture, row and forage crops
CmA	Columbia fine sandy loam, 0-1 percent slopes	IIw-2	—	irrigated row and forage crops
FbA	Foster loam 0-1 percent slopes	IIw-2	—	irrigated row and forage crops
Twa	Tujunga loamy sand, 0-3 percent slopes	IIIe-4	—	pasture irrigated crops

Sources: U. S. Department of Agriculture, Soil Conservation Service, Madera Office; U. S. Department of Agriculture, Soil Conservation Service, *Fresno County, Western Part, California, Soil Survey*, unpublished 1991.

the area, are classified as prime (much of this area, however, is already developed with a subdivision).

c. Important Farmland Inventory

The SCS also uses another soils classification system: the Important Farmland Inventory (IFI). The IFI is being used by the California Department of Conservation Farmland Mapping and Monitoring Program. This program provides a source of information for state and local agencies concerned with agricultural land conversion. The IFI identifies four farmland categories: prime land, additional farmland of statewide importance, unique farmland, and additional farmland of local importance. According to the Department of Soil Conservation, "Prime Farmland" is land which has the best combination of physical and chemical features for the production of agricultural crops, while "Farmland of Statewide Importance" refers to land with a good combination of physical and chemical features for the production of agricultural crops. Land which has lesser quality soils used for the production of California's leading agricultural cash crops are considered to be "Unique Farmland". "Farmland of Local Importance" refers to all farmable land which does not meet the definitions of Prime, Statewide Importance, or Unique Farmland. Soils in the Firebaugh area have not yet been mapped in accordance with the Important Farmland Inventory system. According to the SCS, however, Soils 101, 282, 283, 285, and 472 (see Table VII-1) are soils of statewide importance.

d. Agricultural Water Supply

A significant factor related to agricultural productivity is the availability of water. Two water districts serve the Firebaugh area: the Central California Irrigation District, on the western side of the San Joaquin River, and the Columbia Irrigation District, on the eastern side of the river. These water districts and their water supplies are discussed in Chapter V, Public Facilities and Services.

e. Williamson Act

The California Land Conservation Act (Williamson Act) and California Government Code Section 51290 et seq. encourage conservation of agricultural lands by providing a tax incentive to land owners who contract with the County to restrict land uses to agricultural and compatible uses. Almost all land within the Firebaugh SOI, outside of the Firebaugh city boundaries, is under Williamson Act contract (see Figure I-12 in Section I). None of the property owners have filed for non-renewal. When a property owner files for non-renewal, it begins a ten-year, phase-out program.

4. AIR RESOURCES

a. Introduction

Firebaugh is located within the San Joaquin Valley air basin. The pollution potential for this air basin is very high due to topographic and meteorological conditions which often restrict the dispersion of pollutants.

The vertical mixing of air pollutants in the air basin is limited by the presence of persistent temperature inversions (where the temperature of the air increases rather than decreases with altitude). Inversions may be either ground level or elevated. Ground level inversions occur frequently during early fall and winter (October through January). High concentrations of primary pollutants (those which are emitted directly into the atmosphere such as carbon monoxide [CO]) may be found at these times.

Elevated inversions act as a lid over the basin and limit vertical mixing. Severe air stagnation occurs as a result of these inversions. Elevated inversions contribute to the occurrence of high levels of ozone observed during summer months in the air basin.

b. Regional Air Quality Planning

In 1977, the U. S. Environmental Protection Agency (EPA) designated Fresno County as a non-attainment area for three pollutants: carbon monoxide, suspended particulates, and ozone. This was based on continued violations of the federal primary standards for these pollutants. The entire County is considered non-attainment for ozone and particulates (PM_{10}); only metropolitan Fresno is considered non-attainment for carbon monoxide.

The Clean Air Act required the preparation of a non-attainment plan showing how the federal standards were to be met by 1982. Because some areas in California were not able to attain these standards by 1982, the State requested, and was granted, an extension to 1987.

The Fresno County Air Pollution Control District (APCD) prepared the *Air Quality Management Plan* (AQMP) in 1982. This plan established a reduction program for hydrocarbons and carbon monoxide from mobile, stationary, and area sources. The implementation of the AQMP is the responsibility of many agencies, including the APCD, the County Planning Division, the Fresno County Council of Governments, CalTrans, all the cities within the County, and the California Air Resources Board. The non-attainment plan for suspended particulates is the responsibility of the California Air Resources Board.

Despite some improvements in air quality in recent years, the National Ambient Air Quality Standards were not met by the December 31, 1987 deadline

specified in the Clean Air Act. EPA-adopted interim policies regarding post-1987 non-attainment areas and the 1990 Federal Clean Air Act Reauthorization Bill established new time limits for the revision of the State Implementation Plan (SIP). The 1990 Act gave the County until November 1991 to develop a plan for attainment and maintenance of the PM_{10} standards and until 1992 for ozone planning.

The State of California has had its own ambient air quality standards for many years. However, until the California Clean Air Act was signed into law on January 2, 1989, there was no requirement that these standards be attained by any date. This legislation required areas that exceed the California ambient air quality standards to plan for the eventual attainment of the standards. The time given to various areas depended on the severity of air quality problems. Areas classified as "moderate" have until 1994 to attain the state standards, while "serious" and "severe" areas have until 1997 and beyond, respectively. Individual areas have not yet been classified.

The California Clean Air Act required local air pollution control districts to prepare air quality attainment plans by either December 31, 1990 or June 30, 1991. The June 30, 1991 deadline applied to districts which are either contributors or receptors of transported ozone pollution; the December 31, 1990 deadline applied to all other districts. Generally, these plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods. The Act also granted air districts explicit statutory authority to adopt indirect source regulations and transportation control measures, including measures to encourage or require the use of ridesharing, vanpooling, flexible work hours, or other measures which reduce the number or length of vehicle trips. Fresno County was subject to the June 1991 deadline. A draft plan was completed and underwent an extensive review before its adoption in January 1992.

On March 20, 1991, a new air pollution control board was created to address air quality issues for the entire San Joaquin Valley, including Fresno, Kings, Kern, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. The new San Joaquin Valley Unified Air Pollution Control District (APCD) has integrated the various county zones into one planning body. Three regional offices have been created to deal with projects within the District: a northern office to deal with projects in San Joaquin, Stanislaus, and Merced Counties, a southern office to deal with projects in Kern and Tulare Counties, and a central office in Fresno to deal with projects in Fresno, Kings, and Madera Counties.

In addition to the above, to address regional problems of air pollution, the eight counties in the San Joaquin Valley air basin have entered into a joint powers agreement forming the San Joaquin Valleywide Air Pollution Study Agency to conduct the San Joaquin Valley Air Quality Study. The study is a multi-year program of meteorology and air quality monitoring, emission inventory

development, data analysis, and air quality simulation modeling. The study's objectives are two-fold: to provide an improved understanding of the conditions which lead to high ozone in the San Joaquin Valley, and to provide decision makers with the information necessary to ensure that sound regional plans for equitable and effective emission controls can be developed. An intensive monitoring program of air quality and meteorology has been conducted and all field work for the program has been completed. An extensive air quality simulation modeling and data analysis program will be undertaken soon and is expected to be completed by mid-1994. The knowledge gained from the modeling and analysis will help to provide information needed by decision makers to implement programs to improve air quality in the valley.

c. Air Quality Standards

The Clean Air Act of 1967, as amended, established air quality standards for several pollutants. These standards are divided into primary standards, which are designed to protect the public health, and secondary standards, which are intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. In addition, the State of California has adopted its own standards. These standards represent durations of time for specific contaminant levels which are designed to avoid adverse effects with a margin of safety. The state and federal standards for criteria pollutants are shown in Table VII-2.

d. Air Quality Monitoring Data

The San Joaquin Valley Unified APCD, Fresno Zone monitors air quality in Fresno County at six monitoring stations, four in the Fresno area, one east of Fresno in Parlier, and one southwest of Fresno at Five Points. The station closest to Firebaugh is located in Fresno at Sierra Sky Park, 4232 West Herndon Avenue. Data on carbon monoxide and ozone levels are gathered at this station. Levels of suspended particulates (PM_{10}) are measured at the Five Points station. A summary of this information is presented in Table VII-3. In 1990, the latest year for which figures are available, carbon monoxide levels at this station did not exceed the federal and state 8-hour standard of 9.0 ppm on any day during the year. Ozone levels exceeded the state 1-hour standard of 0.09 ppm 12 times; the federal standard, 0.12 ppm, was exceeded twice. The state and federal standards for suspended particulate matter under 10 microns (PM_{10}) are expressed as annual geometric mean (state) or annual arithmetic mean (federal). In 1990, the annual geometric mean at the Five Points station was 47.0 ug/m3, which exceeds the state standard of 30 ug/m3. The annual arithmetic mean was 63.4 ug/m3, which exceeds the federal standard of 50 ug/m3.

TABLE VII-2

AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	National	California
Ozone	1-hour	0.12 ppm	0.09 ppm
Carbon Monoxide	8-hour	9.00 ppm	9.00 ppm
	1-hour	35.00 ppm	20.00 ppm
Nitrogen Dioxide	Annual	0.05 ppm	---
	1-hour	---	0.25 ppm
Sulfur Dioxide	Annual	0.03 ppm	---
	24-hour	0.14 ppm	0.05 ppm
	1-hour	---	0.25 ppm
Suspended Particulate	Ann. Average	50 ug/m^3	30 ug/m^3
(PM_{10})*	24-hour	150 ug/m^3	50 ug/m^3

*The state PM_{10} annual standard is for the geometric mean of all measurements. The federal standard is based upon the arithmetic mean of all measurements.

Source: California Air Resources Board, *Summary of Air Quality Data*, 1989.

TABLE VII-3

SUMMARY OF AIR QUALITY MONITORING DATA FOR THE CITY OF FIREBAUGH

Monitoring Station[a]	Parameter	Carbon Monoxide			Ozone			PM_{10}		
		1988	1989	1990	1988	1989	1990	1988	1989	1990
Sierra Sky Park	Peak hour value[b]	9.0	5.0	6.0	0.15	0.13	0.14	---	---	---
	Peak 8-hour value[b]	3.4	3.1	3.4	N/A	N/A	N/A	---	---	---
Five Points[d]	Ann. Geometric Mean	---	---	---	---	---	---	43.5	42.1	47.0
	Ann. High	---	---	---	---	---	---	162	132	297
	Days above standard[c]	0	0	0	60	39	12	N/A	N/A	N/A

[a]Data for carbon monoxide and ozone was gathered from the nearest monitoring station, located in Fresno at Sierra Sky Park, 4232 West Herndon Avenue. The station is located approximately 32 miles east of Firebaugh. Data for suspended particulates (PM_{10}) was gathered from the monitoring station at Five Points, approximately 36 miles southwest of Firebaugh.

[b]Peak hour and peak 8-hour values given as parts per million by volume (ppm).

[c]For ozone, days with peak 1-hour value exceeding state primary standard of 0.09 ppm; for carbon monoxide, days with a peak 8-hour average value exceeding the federal primary and state standards of 9 ppm.

[d]Particulate matter (PM_{10}) statistics are provided for the annual geometric mean (top row) and annual high measurement (second row). Daily averages and the number of days in which PM_{10} levels exceeded state or federal standards are not recorded.

Source: California Air Resources Board *Summary of Air Quality Data*, 1988-1990

e. Characteristics and Sources of Pollutants

(1) Introduction

Air pollution comes from many sources, natural as well as man-made. Natural sources of air pollution include forest fires and volcanic eruptions. Human sources range from solvents to pesticides to automobiles. Table VII-4 presents information on sources of air pollution within Fresno County and their contribution to levels of reactive organic gases, nitrogen oxides, and carbon monoxide within the County.

(2) Photochemical Oxidant/Ozone

The term "photochemical oxidant" can include several different pollutants. They are colorless, toxic gases, the most common of which are O_3 (more than 90 percent); formaldehyde (HCHO); peroxyacyl nitrate (CH_3-CO-$OONO_2$), commonly abbreviated PAN; and peroxybenzol nitrate (PBzN).

Photochemical oxidants are formed in the atmosphere when oxidant precursors, reactive hydrocarbons (RHC), and oxides of nitrogen (NO_X), combine and react in the presence of sunlight. The sources of these precursor pollutants are numerous and widespread, with the major sources including motor vehicles, industrial processes, combustion, solvents, and paints.

In the San Joaquin Valley, oxidant precursors are usually carried by the prevailing northwest winds. High oxidant levels may, therefore, be found in areas five to fifty kilometers downwind of any significant emission source.

Photochemical oxidants are a characteristic of southern-California-type smog, and reach their highest concentration during the summer and early fall. Motor vehicles are the major source of emissions of NO_X and RHC.

The common effects of oxidants are damage to vegetation and cracking of untreated rubber. Photochemical oxidants in high concentrations can also directly affect the lungs, causing respiratory irritation and possible changes in lung function. Ozone concentrations recorded within Fresno County between 1980 and 1989 are listed in Table VII-5.

(3) Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas produced by incomplete combustion of carbon-containing substances. CO concentrations are generally higher in the winter when meteorological conditions favor the buildup of air contaminants. Internal combustion engines, principally the automobile, contribute CO due to incomplete combustion of the fuels used. Various industrial processes also produce CO emissions through incomplete combustion.

TABLE VII-4

1985 EMISSIONS FOR FRESNO COUNTY IN AVERAGE ANNUAL TONS PER DAY

Source Category	Reactive Organic Gases	Nitrogen Oxides	Carbon Monoxide
Industrial Processes	5.52	5.93	0.09
Fuel Combustion	0.55	23.48	5.23
Surface Coating	6.01	---	---
Solvent Use	20.07	---	---
Petroleum Distribution	37.09	0.13	0.13
Pesticide Application	10.41	---	---
Controlled Burning	0.95	0.35	5.34
On-road Mobile Source	30.70	43.33	234.49
Off-road Mobile Source	10.45	22.40	70.91

Source: California Air Resources Board, *Preliminary Emission Trends, Base Year 1985*. October 20, 1989.

TABLE VII-5

FRESNO COUNTY OZONE CONCENTRATIONS ANNUAL MAXIMUM AND DAYS EXCEEDING STANDARD

Year	Annual Maximum (ppm)	Days Over .12 ppm	Days Over .09 ppm
1980	.21	54	104
1981	.18	36	95
1982	.18	26	79
1983	.17	23	77
1984	.17	42	109
1985	.16	34	112
1986	.18	39	118
1987	.20	43	127
1988	.19	43	128
1989	.15	24	109

Source: California Air Resources Board, *Summary of Air Quality Data*, 1980-1989.

In Fresno County, gasoline-powered motor vehicles are the largest source of this contaminant. Other sources are aircraft, mobile equipment, range improvements, and orchard heaters (State of California Air Resources Board, 1982). High concentrations of the gas are found only very near the source, such as near areas of high traffic volumes.

CO does not irritate the respiratory tract, but passes through the lungs directly into the blood stream. It interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues, primarily the heart and brain, of oxygen. It is not known to have adverse effects on vegetation, visibility, or material objects. Carbon monoxide levels recorded within Fresno County between 1980 and 1989 are presented in Graph VII-1.

(4) Suspended Particulates

Particulate matter, either liquid or solid, consists of particles of varying size and composition. Particulates may originate in nature or as a direct result of human activities. Dust, mist, ash, smoke fumes, and pollen are all particulate matter. In areas close to major sources, particulate concentrations are generally high in the winter when more fuel is burned and meteorological conditions favor the buildup of contaminants.

The major sources of particulate matter affecting the Fresno County area are natural sources, entrained road dust from paved and unpaved roads, and agricultural operations.

Very small particles (10 microns or less in diameter is the respirable range) may be ingested deep into the lungs and may act alone or synergistically with gaseous contaminants to produce lung tissue damage. Suspended in the air, particulates of aerosol size (<1 micron) can both scatter and absorb sunlight, thus reducing the amount of solar energy reaching the surface, producing haze, and restricting visibility. Particulates can also cause a wide range of damage to materials.

5. VEGETATION AND WILDLIFE RESOURCES

(Robert Winter, Biologist, assisted in the preparation of this subsection.)

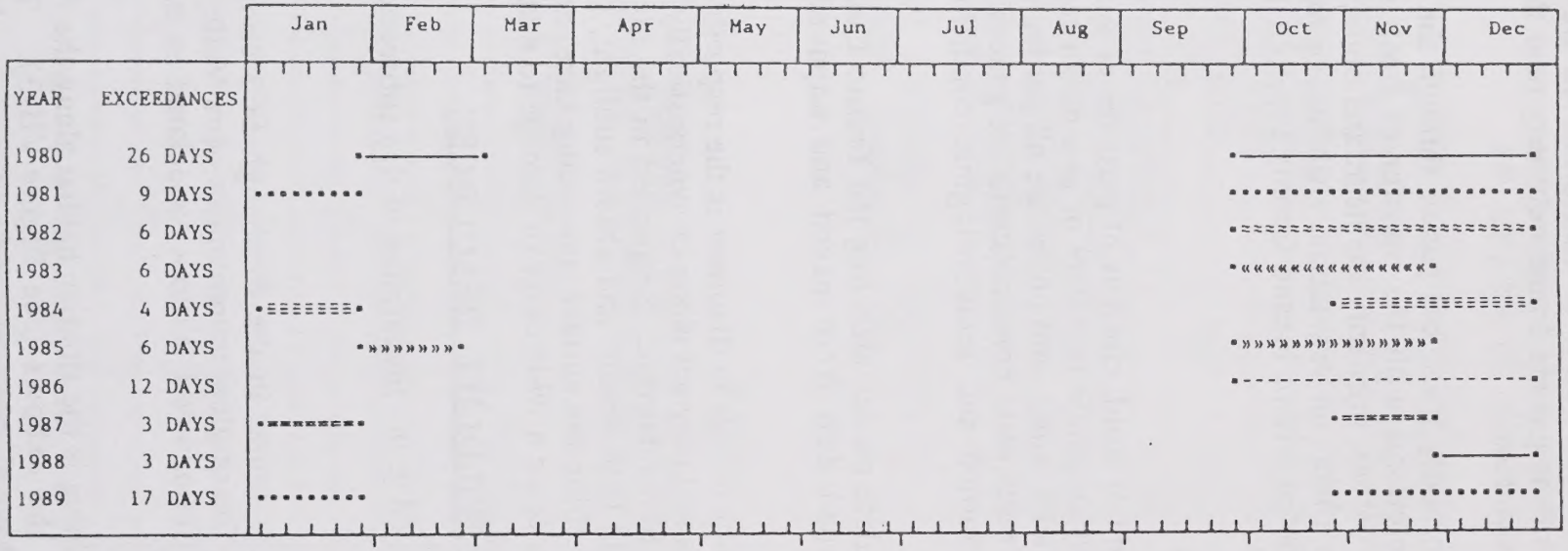
a. Introduction

The plant and animal resources found in the Firebaugh SOI consist of both natural and disturbed habitats. The original communities were Valley Grassland, Alkali Sink, and the Riparian Cottonwood Willow Associated as described by Munz and Keck.

The only true natural area remaining is the riparian habitat along the San Joaquin River and its flood plain on the oxbows (see Figure VII-3). The Valley Grasslands and the Alkali Sink have all been replaced by farming—chiefly cotton

GRAPH VII-1

CARBON MONOXIDE EXCEEDANCES



Exceedances of the State and Federal 8-Hour Carbon Monoxide Standard (9 ppm)

1980 (0.3 ppm or more)
Fresno - Olive Station: February, 2 days; October, 4 days; November, 12 days; December, 8 days

1981 (9.3 ppm or more)
Fresno - Olive Station: January, 2 days; October, 2 days; November, 2 days; December, 3 days

All following years record carbon monoxide levels of 9.1 ppm or more:

1982 Fresno - Olive Station: October 2, days; November, 2 days
Cal. State: December, 2 days

1983 Fresno - Olive Station: October, 3 days; November, 3 days

1984 Fresno - Olive Station: January, 1 day; November, 1 day; December, 2 days

1985 Fresno - Olive Station: February, 1 day; October, 1 day; November, 4 days

1986 Fresno - Olive Station: October, 2 days; November, 8 days; December, 2 days

1987 Fresno - Olive Station: January, 2 days; November, 1 day

1988 Fresno - Olive Station: December, 3 days
Fresno - 4706 E. Drummond: detected an exceedance on one of the same days as the Olive Station. Exceedance days are counted only once even if more than one station detects a violation on the same day, so the total for 1988 is 3 days of exceedance

1989 Fresno - Olive Station January, 1 day; November; 8 days; December, 8 days. One of the December exceedance days also registered an exceedance of the State One Hour Carbon Monoxide Standard, reaching 23 ppm for one hour.

Source: Fresno county Air Pollution Control District, 1991

at this time. The following subsections will describe three remaining areas of special concern within the Firebaugh SOI.

b. Riparian Woodland Habitat

There is still some excellent riparian woodland habitat consisting of willows, cottonwoods, and various understory plants found adjacent to the San Joaquin River within the Firebaugh SOI. The City of Firebaugh is located directly on the river and there is easy access to the riparian habitat by roads from the City. As a result, there has been considerable damage to the riparian habit from motorized vehicles in the area, cutting of trees, and the disposal of trash and rubbish.

Riparian species inventories were undertaken on three separate days. The plants and animals which were identified are listed on Table VII-6.

The mature cottonwood trees have several large solitary stick nests usually associated with the reproduction of raptors, including Red-tailed hawks, Red-Shouldered Hawks, Great Horned Owls, and Swainson's Hawks. Although none of these raptors were sighted, Swainson's Hawks have reportedly been seen in the area.

c. San Joaquin River Channel

Before the advent of Friant Dam, the San Joaquin River provided excellent salmon, striped bass, and warm water fisheries. Much of the overhanging vegetation that contributed to the fishery has or is being removed. River bank erosion is occurring where the vegetation has been removed. This results in siltation, loss of food, and loss of spawning success for fish. Because of the present water conditions, there are few bass and only an occasional salmon to be found in the river at this time. The present fish population was not inventoried other than by communications with fishermen.

At one time, there was a large colony of Bank Swallows slightly upstream from Firebaugh. They no longer are found at that location and the reasons for their decline are unknown. There is at least one vertical river bank that could possibly be utilized by Bank Swallows if they should return.

The loss of clear water and native vegetation has also resulted in a decline in water fowl.

With all of these native factors on the decline, there is still considerable use of the river and its riparian vegetation by wildlife. It is the major migration corridor through the Central Valley for many species of birds. It is the breeding habitat for California Quail, Mourning Doves, Herons, Egrets, and raptors.

d. North Firebaugh

A 53-acre site formerly used for sand and gravel extraction is located on the north end of the City of Firebaugh. It borders the San Joaquin River and the Poso Canal on the west and housing on the south. The previous excavations have left two ponds on the site. Due to their shallow depth, semi-aquatic vegetation—tules, cattails, and willows—are growing in them. There are some mature trees in the area and valley oaks and cottonwoods were planted one year ago. The site furnishes the best wildlife habitat within the Firebaugh SOI.

e. Non-native Habitat

The urban portion of the SOI has been covered by blacktop, concrete, and buildings similar to other small towns and cities. The planting of non-native trees, shrubs, and grasses has created new habitat for some species. These include Western Robins, Western Mockingbirds, Migratory Warblers, Brewer Blackbirds, Cedar Warwings, and Domestic Sparrows.

To the west of Highway 33, the Firebaugh SOI encompasses some farmland, with light industrial uses on some sites. In these areas, the wildlife habitat has been erased. The only current wildlife are a few individuals that stray into the area.

The cotton fields with weed-covered irrigation ditches do create some habitat for the introduced Ring-necked Pheasant. In recent years, however, pheasant populations have drastically declined.

The canals through the Firebaugh area afford some fishing for warm water fishes such as catfish. The banks have been stripped of vegetation, however, and offer little habitat for fishes.

f. Species of Special Concern

There were no plant or animal species of special concern identified during the inventories undertaken in November and December. Because there is appropriate habitat, especially along the river, there is a potential for some species of special concern to be located in the Firebaugh SOI. These species are discussed below.

(1) Plants

There are no known threatened or endangered plant species in the Firebaugh SOI.

TABLE VII-6

RIPARIAN SPECIES INVENTORIES
11/17/91, 12/6/91, 12/12/91

Plant Species Inventories:

Common Name	Scientific Name
Major Tree Species	
Black Willow	*Salix nigra*
Red Willow	*Salix laevigata*
Arroyo Willow	*Salix lasiolepis*
Fremont Cottonwoods	*Populus fremontii*
Tree and Brush Species	
Sand Bar Willow	*Salix hindsiana*
Buttonwillow	*Cephalanthus occidentalis*
Ash	*Fraxinus latifolia*
Understory Species	
Mugwort	*Artemisia douglasiana*
Blackberries	*Rubus* sp.
Wild Rose	*Rosa calif.*
Salt Brush	*Atriplex* sp.
California Grapes	*Vitus calif.*
Tules	*Scirpus calif.*
Cattails	*Typha* sp.
Smartweed	*Polygonum* sp.
Sunflowers	*Helianthus annus*
Escaped Vegetation	
Black Walnut	*Juglans* sp.
Mulberry	*Monula* sp.
Tamarisk	*Tamarix* sp.
European Sycamore	*Platanous* sp.
Giant Grass	*Arundo donax*

Animal Species Inventories:

Common Name	Scientific Name
Birds	
Western Grebe	*Aechmophorus occidentalis*
Pied Billed Grebe	*Podilymbus podiceps*
Great Blue Heron	*Andea herodias*
Great Egret	*Casmerodius albus*
Snowy Egret	*Leucophoyx thula*
Cattle Egret	*Bubuleus ibis*
Canada Goose	*Branta canadensis*
Mallard Duck	*Anas platyrhynchos*

TABLE VII-6 (continued)

RIPARIAN SPECIES INVENTORIES
11/17/91, 12/6/91, 12/12/91

Animal Species Inventories:

Common Name	Scientific Name
Wood Duck	*Aix sponsa*
Turkey Vulture	*Cathartes aura*
Black Shouldered	*Kite Elanus levaurus*
Coopers Hawk	*Accipiter cooperii*
Redtailed Hawk	*Buteo jamaicensis*
Northern Harrier	*Circus cyaneus*
American Kestrel	*Falco sparverius*
California Quail	*Lophortyx calif.*
Ringnecked Pheasant	*Phasianus colchicus*
Rail	(Species undetermined, probably sora)
American Coot	*Fulica americana*
Killdeer	*Charadrius vociferus*
Spotted Sandpiper	*Actitis maculara*
Greater Yellow Legs	*Totanus melanoleucus*
Gulls	(Undetermined species)
Mourning Dove	*Zenaidura macroura*
Great Horned Owl	*Bubo virginianus*
Belted Kingfisher	*Megaceryle alcyon*
Red Shafted Flicker	*Colaptes cafer*
Black Phoebe	*Sayornis nigricans*
Scrub Jay	*Aphelocoma coerulescens*
Western Mockingbird	*Mimus polyglottis*
Western Robin	*Tundus migratorius*
Common Crow	*Corvus brachyrhynchos*
Loggerhead Shrike	*Lanius ludovicianus*
Audubons Warbler	*Dendroica auduboni*
House Sparrow	
Western Meadowlark	
House Finch	
White Crowned Sparrow	

<u>Mammals</u>

Muskrats	*Ondatra zibethica*
Beavers	*Castor canadensis*
Raccoons	*Procyon lotor*
Opossums	*Didelphis virginiana*
Feral Housecats	*Felis domestica*

Source: Robert Winter, Biologist

(2) Animals

(a) Valley Elderberry Longhorn Beetle

A plant known to occur in the Firebaugh area, but not inventoried, is the Elderberry. The Elderberry is host to the endemic Valley Elderberry Longhorn Beetle, which is federally listed as a threatened species.

(b) Giant Garter Snake

The Giant Garter Snake grows to over four feet in length. The species generally prefers wetlands that contain upland habitat with shrubby undergrowth which provides protective cover. This snake is state listed as a threatened species and is a federal candidate for listing as a threatened species.

(c) Western (California) Yellow-Billed Cuckoo

Yellow-Billed Cuckoos require stands of willow-cottonwood forest greater than 25 acres in extent and wider than 300 feet. Some habitat along the San Joaquin River may meet this criteria. The Yellow-Billed Cuckoo is state listed as a threatened species and is a federal candidate for listing as a threatened species.

(d) Swainson's Hawk

This hawk requires relatively large expanses of undisturbed grassland (or hay, wheat, or alfalfa fields) supporting at least moderate populations of rodents. They also require large trees for nesting and roosting. According to the Department of Fish and Game, Swainson's Hawks have been seen in the Firebaugh area. The Swainson's Hawk is state listed as a threatened species and is a federal candidate for listing as a threatened species.

(e) California Desert Kit Foxes

This species is federally listed as endangered and is listed by the state as threatened. Kit fox habitat includes dry sinks, open grassland areas, and along the San Joaquin River. Although there is potential habitat for California Desert Kit Foxes in the Firebaugh SOI, the probability of finding them here is low due to human influence and the modified habitat.

(f) Fresno Kangaroo Rat

The Fresno Kangaroo Rat is federally and state listed as endangered. The rat is known in the San Joaquin Valley from Merced County south to the northern border of Tulare County. It appears to prefer open grasslands. Although there is no habitat for this species within the Firebaugh SOI, some populations are located within a few miles of Firebaugh.

6. MINERAL RESOURCES

No mineral-bearing geologic formations or sediments of economic value are known to exist within the Firebaugh SOI.

7. FINDINGS

- Water quality in the San Joaquin River, at higher elevations, is excellent, but as the river moves through the San Joaquin Valley, it is degraded by agricultural and domestic use.

- Groundwater is the source of the City's potable water. Groundwater quality is generally good, but occasionally, secondary health standards for manganese and iron are exceeded.

- The groundwater levels within Firebaugh's SOI are relatively high, with some fluctuation from year to year.

- Two significant problems with groundwater in the Firebaugh area have been identified: a shallow, or high, water table and saline buildup in the soil.

- None of the soils on the west side of the San Joaquin River within the Firebaugh SOI have been identified by the Department of Soil Conservation as prime agricultural soils. Some soils on the east side of the river are identified as prime agricultural soils. For the most part, these soils have already been taken out of agricultural use by the development of a subdivision. The soils in the Firebaugh area have not yet been mapped under the Important Farmland Inventory system, developed by the California Department of Conservation Farmland Mapping and Monitoring Program.

- Fresno County has been designated as a non-attainment area for three pollutants: ozone and particulates (PM_{10}) for the entire County, and carbon monoxide for metropolitan Fresno.

- No plant or animal species of special concern were encountered within the SOI during three inventories conducted in November and December 1991. Habitat for three species of special concern was found within the SOI: Swainson's Hawk, Western (California) Yellow-Billed Cuckoo, and Giant Garter Snake. Habitat for the Valley Elderberry Longhorn Beetle could also be found along the San Joaquin River.

WATER RESOURCES SOURCES CONSULTED

Beatty, Larry, Senior Engineer, Central Coast Region, California Regional Water Quality Control Board. Telephone Interview. November 1991.

Brownwood, Robert, Sanitary Engineer, Fresno Office, California Department of Health. Telephone Interview. November 1991.

Camoroda, Anthony D., State Department of Water Resources.

Chedester, Steve, Manger, Mendota Office, Firebaugh Canal Water District. Telephone Interview. November 1991.

Davies, Jim, Water Resources Technician II, State Department of Water Resources. Personal Interview. November 1991.

Enloe, Holly Jo, Water Resources Technician, State Department of Water Resources. Personal Interview. November 1991.

Esseray, Dale, Water Resources Control Engineer, Central Coast Region, California Regional Water Quality Control Board. Personal Interview. November 1991.

Jones, Clinton, Hydrologic Technician, U. S. Bureau of Reclamation. Telephone Interview. November 1991.

Kolb, Howard, Water Resources Control Engineer, Central Coast Region, California Regional Water Quality Control Board. Personal Interview. November 1991.

Landis, Paula, Civil Engineer, San Joaquin River Management Program, State Department of Water Resources. Personal Interview. November 1991.

Pfitzer, Robert, Hydro Technician, Los Banos Office, Central California Irrigation District. Telephone Interview. November 1991.

Porter, Mike, Manager, Los Banos Office, Central California Irrigation District. Telephone Interview. November 1991.

Rabe, Fred, City Engineer, City of Firebaugh. Personal and Telephone Interviews. January 1991-December 1991.

Riddle, Gary J., Water Resources Technician II, State Department of Water Resources. Personal Interview. November 1991.

Shanks, Gary, Geologist, State Department of Water Resources. Personal Interview. November 1991.

Swanson, Arvey, Chief of Planning Branch, San Joaquin District, Supervising Engineering Geologist, State Department of Water Resources. Personal Interview. November 1991.

Takemoto, Don, Water Resources Technician II, State Department of Water Resources. Personal Interview. November,1991.

Williams, Dennis, State Department of Water Resources. Personal Interview. November 1991.

Wilson, David, Director, Department of Public Works, City of Firebaugh. Telephone Interview. November 1991.

AGRICULTURAL SOILS AND RESOURCES SOURCES CONSULTED

Arroues, Kerry, Hanford Office, Soil Conservation Service, U. S. Department of Agriculture. Telephone Interviews. November and December 1991.

Cobb, Sam, Soil Conservationist, Soil Conservation Service, U. S. Department of Agriculture. Telephone Interview. December 1991.

Conroy, Kevin, Fresno Office, Soil Conservation Service, U. S. Department of Agriculture. Telephone Interview.

Nielsen, Don, Madera Office, Soil Conservation Service, U. S. Department of Agriculture. Telephone Interview. November 1991.

U. S. Department of Agriculture, Soil Conservation Service. *Soil Survey, Madera Area, California.* May, 1962.

U. S. Department of Agriculture, Soil Conservation Service, *Fresno County, Western Part, California, Soil Survey*, unpublished 1991.

AIR RESOURCES SOURCES CONSULTED

California Air Resources Board, "Facts About How Air Pollution Damages Health". 1983.

California Air Resources Board. *California Air Quality Data Annual Summary.* Volumes XXI-XXI. 1980-1989.

California Air Resources Board. *Revised Preliminary Emissions Trends for San Joaquin Valley Air Pollution Control Districts*. Base Year 1985.

Consultive Planners. *Draft Environmental Impact Report California Power and Light Corporation Firebaugh Generating Station*. 1983.

Consultive Planners. *Draft Environmental Impact Report, Proposed Firebaugh Redevelopment Plan*. 1983.

Leach, Lance, Health Department Enforcement Officer for Firebaugh Area, Fresno County Air Pollution Control District. Telephone Interview. November 1991.

San Joaquin Valley Unified Air Pollution Control District. *1991 Draft Air Quality Attainment Plan*.

Sweet, Jim, Air Quality Planner, Fresno County Air Pollution Control District. Telephone Interview. November 1991.

VEGETATION AND WILDLIFE RESOURCES SOURCES CONSULTED

Breuggaman, Robert, California Department of Fish and Game. Personal Interviews. November and December 1991.

California Department of Fish and Game. *At the Cross Roads: Report on the Status of California's Endangered and Rare Fish and Wildlife*. 1980, Amended, 1983.

Gaines, David, *Review of the Status of the Yellow-Billed Cuckoo in California: Sacramento Valley Populations*. 1974.

Ingles, Lloyd G, *Mammals of California and Coastal Waters*. Stanford University Press. 1965.

Munz, P. A. and D. D. Keck. *A California Flora with Supplement*.. University of California Press, Berkeley. 1975.

Stebbins, John, Biologist, California State University, Fresno. Personal and Telephone Interviews. November and December 1991.

U. S. Department of Agriculture. *California Supplement to Draft Environmental Statement Roadless Area Review and Evaluation, Rate II*. 1978.

U. S. Department of the Interior. Threatened Fish and Wildlife. 1974.

MINERAL RESOURCES SOURCES CONSULTED

Fresno, County of. *Fresno County General Plan, Open Space/Conservation Element, Mineral Resources.* 1987.

Harkins, Pete, Senior Staff Analysis, Environmental Review Section, Public Works and Development Services, County of Fresno. Telephone Interview. October 1991.

HEALTH AND SAFETY

1. INTRODUCTION

The purpose of this section is to describe the environmental hazards which should be taken into consideration in the development process. Some of these hazards are natural and man has little control over their occurrence. These hazards include flooding and seismic shaking, and, in some cases, wildland fires. Man-made hazards are those created by the acts of man and include noise, fires, toxic/hazardous materials, and aircraft crash hazards. The impacts which both natural and man-made hazards may have on development can be exacerbated or can be eliminated or minimized by proper siting and design of new facilities and through the incorporation of appropriate mitigation measures into the planning and land use regulations of the City.

This section will review natural and man-made hazards in Firebaugh, including flooding, noise, wildland and urban fires, toxic/hazardous materials, aircraft crash, and noise.

Seismic hazards were considered in the *Five County Seismic Safety Element* prepared by the Five-County Policy and Technical Committees with assistance from Envicom Corporation in 1974. Copies of the Safety Element are available for review at the Firebaugh City Hall. The present General Plan update does not encompass the review or updating of the Seismic Safety Element.

2. FLOODING HAZARDS

a. Introduction

Flooding in Firebaugh could result from a 100-year flood, localized flooding, or dam and levee failure. Flooding occurred along the San Joaquin River, in the Firebaugh area, in 1958 and again in 1969. The flooding was localized and did relatively little damage to structures. No persons were killed or injured during the flooding.

b. The 100-Year Flood Hazard

A 100-year flood has a one percent probability of occurring in any year. This is considered to be a severe flood, but one with a reasonable possibility of occurrence for purposes of land use planning, property protection, and human safety. The Federal Emergency Management Agency (FEMA) prepares maps showing areas which are likely to flood during a 100-year flood event. In 1982,

a new FEMA map covering Firebaugh and the San Joaquin River within its SOI showed several areas along the river and canals and at the southern end of the City as being subject to 100-year floods. Subsequent to the preparation of the FEMA map, however, the City was able to document that the source of the flooding had been eliminated and that the flooding would no longer occur. In 1982, therefore, FEMA rescinded the Flood Hazard Boundary Map for Firebaugh. None of the SOI, therefore, is subject to a 100-year flood hazard.

c. Localized Flooding

The Firebaugh area is subject to some localized flooding. Because the area has a high water table, during wet years the groundwater level becomes so high that some areas in the southern portion of the City near the river flood from groundwater seepage through the soils.

Also, due to improper grading and lack of curbs, gutters, and appropriate flood control measures, the Del Rio community is subject to some localized flooding.

d. Dam Failure Flood Hazard

The risk of dam failure is remote. Dam failure can occur under three general conditions: earthquake; structural instability; and intense rainfall in excess of a dam's holding capacity. The City of Firebaugh is within the area which could be inundated by flood water resulting from the failure of dams on the San Joaquin and Kings Rivers. There are a number of dams on each of the rivers. The extent of the flooding which could occur would depend on the number of dams which failed simultaneously, where they are located, the time of the year, and several other factors. In the worst case situation, with all dams failing at once in late spring-early summer when the reservoirs and lakes are holding the maximum amount of water, the flooding from the San Joaquin River would not reach Firebaugh for 24-36 hours and flooding from the Kings River would take several days. There should be adequate time for the City to be evacuated.

3. FIRE HAZARDS

The primary fire hazard which threatens life and property in Firebaugh is structural fires. Some of the major causes for structural fires include electrical shorts, industrial accidents, carelessness, and arson. Structural fires tend to occur most often in buildings and structures which are old or substandard and which were often constructed prior to the adoption of modern building codes. These buildings tend to be located in the original neighborhoods of Firebaugh or in areas which contained substandard housing units when annexed into the City.

Fire hazards are also the result of inadequate water flows in some parts of the City served by undersized mains. The primary areas of concern are in the southern portion of the City, south of Saipan Street, and in the northern portion

of the City. The City is in the process of upgrading water mains to serve these two areas and expects that the undersized water mains will be replaced by mid-1992. Fires in substandard structures represent the greatest potential for injury, death, or loss of property.

Wildland fires are those which occur in forest, brush, or grasslands, primarily in sparsely developed or existing open space lands. They can result from both man-made and natural causes. Fires which start as wildland fires can also threaten or destroy structures and urban development which are in their general area. The only area defined as wildland in the Firebaugh SOI is along the river channel. The California Department of Forestry and Fire Protection indicates that the potential for wildland fires in Firebaugh is very minimal.

4. TOXIC/HAZARDOUS MATERIALS

Firebaugh has relatively few industries and activities which transport, store, or use toxic materials. Only six *Hazardous Materials Business Plans* have been filed with the Firebaugh Fire Department. Three are related to the storage of gas and oil at service stations or car dealerships; one for the storage of regular and aviation gas and oil for a business at the Firebaugh Airport; and two for use and storage of ammonia, propane, oil and gas, paint and paint thinner, and similar items for fruit packing/cold storage businesses. Although not reported in the business plans, at least one firm is known to transport chemicals and pesticides in and out of the City on an irregular basis. Also not reported, but likely to exist, is the use of chemicals and pesticides on farmland within the SOI.

The *March 1990 Hazardous Waste and or Substance Sites List* identified eight hazardous material sites within Firebaugh's SOI. These include three service stations with leaking tanks identified by the Water Resources Control Board (WRCB); two Firebaugh School District sites with leaking tanks also identified by the WRCB; one leaking tank associated with the Cal Pine Container Corporation; one leaking tank associated with Finance and Thrift, identified by the WRCB; and one site, Tri-Air, Inc., identified pursuant to Section 25356 of the Health and Safety Code (sites included under the Hazardous Substance Cleanup Bond Act).

5. AIRCRAFT CRASH HAZARDS

Crop dusting planes from the Firebaugh Municipal Airport fly over the SOI. The clear zones for the airport are shown on Figure I-11. Land within the zones is currently in agricultural use. Any crash landing of an aircraft is a potentially disastrous hazard. Any aircraft crash could create an accessibility hazard for rescue crews. Unintentional fuel dumps over populated areas would also pose a significant hazard.

6. EMERGENCY RESPONSE

Emergency response organization and responsibilities in Firebaugh are governed by the City's *Emergency Response Plan*. The plan outlines emergency response procedures and evacuation routes.

7. NOISE

(This subsection was prepared by Brown-Buntin Associates, Inc., Consultants in Acoustics.)

a. Introduction

The content of this subsection and the methods used in its preparation have been determined by the requirements of Section 65302(f) of the California Government Code and by the *Guidelines for the Preparation and Content of Noise Elements of the General Plan* adopted and published by the California Office of Noise Control (ONC) in 1976. The ONC Guidelines require that major noise sources and areas containing noise-sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected conditions.

According to the Government Code requirements, noise exposure information should be included in the Noise Element for the following major noise sources:

- Highways and freeways
- Primary arterials and major local streets
- Railroad operations
- Aircraft and airport operations
- Local industrial facilities
- Other stationary sources

Noise-sensitive uses identified by the Government Code and the City of Firebaugh include the following:

- Residential development
- Schools
- Hospitals, nursing homes

- Churches
- Libraries

The Noise Element is intended to minimize future noise conflicts, whereas a noise ordinance resolves existing noise conflicts. A noise control ordinance may be used to address noise levels generated by existing local industrial, commercial, agricultural, and residential uses, which are not regulated by federal or state noise level standards. The regulation of noise sources such as traffic on public roadways, railroad line operations and aircraft in flight is preempted by existing federal and/or state regulations, meaning that such sources generally may not be addressed by a noise control ordinance. The Noise Element addresses the prevention of noise conflicts from all of these sources.

Appendix 1 provides discussions of the fundamentals of noise assessment, the effects of noise on people and criteria for acceptable noise exposure, and is a reference for staff during the review of documents or proposals which refer to the measurement and effects of noise.

b. Methodology

According to the Government Code and ONC Guidelines, noise exposure contours should be developed in terms of the Day-Night Average Level (L_{dn}) or Community Noise Equivalent Level (CNEL) for transportation-related noise sources. Both of these descriptors represent the weighted energy noise level for a 24-hour day after inclusion of a 10 dB penalty for noise levels occurring at night between the hours of 10:00 p.m. and 7:00 a.m. The CNEL descriptor also includes a penalty of about 4.8 dB for noise levels occurring during the evening hours of 7:00 p.m. and 10:00 p.m. The CNEL descriptor was developed for the quantification of aircraft noise, and its use is required when preparing noise exposure maps for airports within the State of California. The CNEL and L_{dn} descriptors are generally considered to be equivalent to each other for most community noise environments within ±1.0 dB.

Analytical noise modeling techniques were used to develop generalized L_{dn} or CNEL contours for major transportation noise sources within the City for existing and future conditions. A combination of analytical methods and actual noise measurements was used to develop noise exposure information for stationary noise sources. Since the standards to be applied to stationary noise sources are based on the energy average noise level during any one-hour period, noise exposure information was developed for these sources in terms of the equivalent energy sound level (L_{eq}). Analytical noise modeling techniques generally make use of source-specific data, including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. Analytical methods have been developed for many environmental noise sources, including roadways, railroad line operations, railroad yard

operations, industrial plants, and aircraft/airport operations. Such methods will produce reliable results as long as data inputs and assumptions are valid for the sources being studied.

The analytical methods used in the preparation of this Noise Element closely follow recommendations made by the State Office of Noise Control. Methods included the FHWA Highway Traffic Noise Prediction Model for roadway sources, the Wyle Laboratories method for determining railroad noise exposure, and the Federal Aviation Administration (FAA) Integrated Noise Model (INM) for the assessment of aircraft/airport noise sources.

The noise exposure information developed during the preparation of the Noise Element does not include all conceivable sources of industrial, commercial, or agricultural noise within the City, but rather is a representative sampling of typical sources. The noise exposure information developed for the sources identified for study should be used only as an indicator of potential noise impacts when other, similar sources are considered.

c. Roadways

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop L_{dn} contours for Highway 33 and Avenue 7½/13th Street. The FHWA Model is the analytical method currently favored by most state and local agencies, including Caltrans, for highway traffic noise predication. The model is based upon reference energy emission levels for automobiles, medium trucks (2 axles), and heavy trucks (3 or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within ± 1.5 dB. The model assumes a clear view of traffic with no shielding at the receiver location. To predict L_{dn} values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume. The Calveno traffic noise emission curves were used as recommended by Caltrans to more accurately calculate noise levels generated by California traffic.

For Highway 33, existing (1990) and future (2010) annual average daily traffic (AADT) volumes and percentages of trucks were obtained from Caltrans. Since day/night distribution of traffic was not available from Caltrans, data for similar roadways from Brown-Buntin Associates, Inc. files were utilized. Madera County provided the existing (1991) AADT for Avenue 7½/13th Street in the vicinity of Firebaugh. Since future traffic volumes, truck percentages or the day/night traffic distribution were not available, these data were estimated by Brown-Buntin Associates, Inc. based upon comparable roadways.

Distances from the center of Highway 33 and Avenue 7½/13th Street to the 60 and 65 dB L_{dn} contours along with input data used in the FHWA Model are summarized in Table VIII-1. Noise contour maps are . ıown in Figures VIII-1 and VIII-2.

d. Railroads

The Westside Branch of the Southern Pacific Railroad closely follows Highway 33 through Firebaugh. According to the S. P. Trainmaster's office in Fresno, one train per day typically passes through Firebaugh. Noise levels from railroad operations in Firebaugh were quantified using the analytical method developed in 1973 by Wyle Laboratories (Wyle Laboratories Report WCR-73-5). The Wyle methodology calculates noise exposure based on reference noise level data for various types of trains under different operating conditions, distance from the tracks, speed, and the characteristics of the track the trains pass over. According to the Wyle methodology and the frequency of operation provided by the S. P. Railroad, the 65 and 60 dB L_{dn} contours would be located approximately 29 and 63 feet, respectively, from the tracks. These distances are generally within the railroad right-of-way. Although noise exposure as defined by the L_{dn} is not significant from the railroad, some intermittent interruption of activities due to noise may happen to persons located near the tracks.

e. Major Stationary Noise Sources

(1) Introduction

The production of noise is an inherent part of many industrial, commercial, and agricultural processes, even when the best available noise control technology is applied. Noise production within an industrial or commercial facility or in close proximity to many types of agricultural equipment is controlled indirectly by federal and state employee health and safety regulations (OSHA and Cal-OSHA). However, exterior noise emissions from such operations have the potential to exceed locally acceptable standards at nearby noise-sensitive land uses. Generally, new stationary noise sources or existing noise sources which are undergoing modification that might increase noise levels should not be permitted to generate noise levels that exceed the standards on Table VIII-2 on lands designated for noise-sensitive uses.

Noise control issues focus upon two objectives: to prevent the introduction of new noise-producing uses in a noise sensitive area, and to prevent encroachment of noise-sensitive land uses upon existing noise-generating facilities. The first objective can be achieved by applying performance standards to proposed new industrial or other noise generating uses. The second objective can be met by requiring that new noise-sensitive uses in proximity to existing noise sources

TABLE VIII-1

DISTANCE TO L_{dn} CONTOURS AND TRAFFIC DATA
CITY OF FIREBAUGH

	AADT						Distance to L_{dn} Contours (Feet)[1]			
							1990 (or 1991)		2010	
Roadway	1990 (or 1991)	2010	% D/N[2] Split	%MT[3]	%HT[4]	Speed (MPH)	65 dB	60 dB	65 dB	60 dB
Highway 33										
Outside Canal to 15th	6,325	11,800	75/25	6.3	5.5	45	96	206	145	313
15th to 12th	8,100	16,280	75/25	6.3	5.5	45	113	243	180	388
12th to 8th	7,500	15,075	75/25	6.3	5.5	45	107	231	171	368
8th to City Limits	5,300	13,250	75/25	6.3	5.5	45	85	183	157	338
Avenue 7½/13th St.										
W. of San Joaquin R.	4,374	8,748	90/10	2.5	2.5	45	40	87	64	138

[1]Distances are from center of roadway
[2]Day/Night traffic split (day is defined as 7am-10pm and night as 10pm-7am)
[3]Medium Trucks
[4]Heavy Trucks

Sources: Caltrans
Madera County
Brown-Buntin Associates, Inc.

include receiver-based mitigation measures to ensure compliance with the same performance standards.

TABLE VIII-2

MAXIMUM ALLOWABLE NOISE EXPOSURE STATIONARY NOISE SOURCES[1]

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.
Hourly L_{eq}, dB	50	45
Maximum level, dB	70	65

[1] As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.

Noise exposure information for the major stationary noise sources selected for study was developed from operational data obtained from source operators and from noise level measurements conducted at reference locations around the noise sources. In discussing future operations with source operators it was apparent that too many variables exist to allow meaningful projections of future activity or noise levels.

Following are discussions of major stationary noise sources which were identified for study. The discussions are intended to provide generalized information concerning the relative noise impacts of each source, and to identify specific noise sources which should be considered in the review of development proposals where potential noise conflicts could result. The following discussions do not represent a comprehensive accounting of all noise sources in the City. It is probable that unidentified industries or other major noise sources exist which generate significant noise levels and could result in noise-related land use conflicts.

Generalized noise exposure contours were prepared for major stationary noise sources in instances where it was determined that such contours would be located off the property occupied by the source and potentially impact existing or future noise-sensitive land uses. These contours are shown on Figures VIII-1 and VIII-2. It is intended that the generalized contours be used as a screening device to determine when potential noise-related land use conflicts may occur and when site-specific studies may be required to properly evaluate noise at a given noise-sensitive receiver location.

(2) A. Levy & J. Zentner Co. (Contact: Sylvia Hill, Office Manager)

A. Levy & J. Zentner Co. is a produce packing and storage facility located on the southwest corner of 12th Street and Highway 33. The plant packs melons or asparagus delivered from local farms. Most of the packaged food is stored within the facilities for later shipment to various markets. Packing operations are normally from 8:00 a.m. to 5:00 p.m. During peak season, operations could go on as late as 10:00 p.m. The plant is shut down during weekends. The most significant noise sources include the packing line (box making machine, case sealer, etc.), medium and heavy trucks (used for transport of product), cooler fans, and forklifts. An average sound level (L_{eq}) of 73 dB was measured at approximately 50 feet from the packing line. The L_{eq} at 50 feet from the cooling fans was about 72 dB. During peak season, there are approximately 25-27 truck deliveries per day, of which 90 percent are heavy trucks.

(3) Union Ice (Contact: Terry Doyle, Owner)

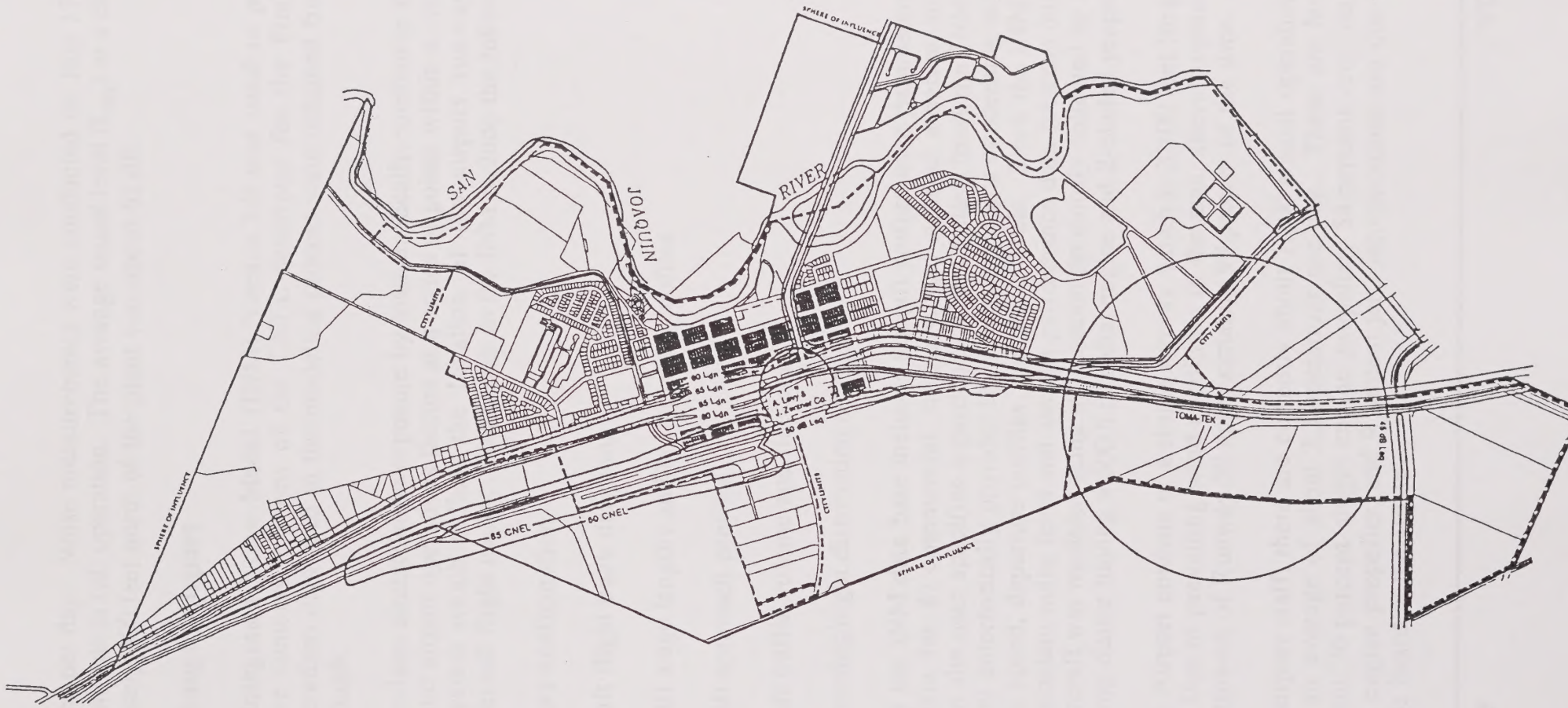
Union Ice is a produce cold storage facility located north of 12th Street and west of Highway 33. Produce brought to the facility directly from the field is cooled with an icing machine and stored for later shipment to market. Operations are typically 7:30 a.m. to 5:00 p.m. However, during peak season (July/August) the facility could operate until 8:00 p.m. The most significant noise sources associated with this operation are medium and heavy trucks (used for produce transport), the icing machine, cold room equipment, and forklifts. During Brown-Buntin Associates, Inc.'s survey on July 16, 1991, the plant was not in operation. When the plant is in operation, 2-3 forklifts would be active and there would be up to 10 heavy truck deliveries per day.

(4) Valley Seed Growers (Contact: Don Knouf, Manager)

Valley Seed Growers is a seed cleaning and processing plant which is located west of Highway 33 in the southern part of the City of Firebaugh. The plant primarily processes alfalfa seeds delivered by trucks. The movement of seeds from one piece of equipment to another during the cleaning process is performed by airlifts which convey seeds from one location to another. This operation is the main source of noise within the plant. During operating season, the plant runs 24 hours a day, Monday through Friday. Since the plant was not in operation during BBA's visit, no noise level measurements were possible.

(5) Toma-Tek (Contact: Tom Sewell, Operation Manager)

Toma-Tek is a tomato processing plant located west of Highway 33 in the southern portion of the City of Firebaugh. The plant is in operation from July through October. During these months the plant operates 24 hours a day. The main sources of noise from the plant are probably boilers, fans, motors, and delivery trucks. During the operating season, there are up to 15 truck trips



Scale: 0 800 ft

Existing (1990)
Noise Contours

Figure VIII-1

from the plant per day. Noise measurements were conducted on July 17, 1991 while the plant was in full operation. The average sound level (L_{eq}) at a distance of approximately 400 feet north of the plant was about 62 dB.

f. Firebaugh Airport

The FAA's Integrated Noise Model (INM) Version 3.9 was used to prepare noise exposure contours in terms of the CNEL descriptor for the Firebaugh Airport. Operations data used in the modeling process were obtained from the City of Firebaugh.

The INM calculates aircraft noise exposure by mathematically combining aircraft noise levels and airport operations factors at a series of points within a cartesian coordinate system which defines the location of the airport runway and generalized aircraft flight tracks. User inputs to the INM include the following:

- Runway configuration
- Aircraft flight track definitions
- Aircraft stage lengths and/or departure profiles
- Aircraft approach profiles
- Aircraft traffic volume and fleet mix
- Day/evening/night distribution of flights

Version 3.9 of the INM data base includes aircraft performance parameters and noise level data for 81 commercial, military, and general aviation aircraft classes. When the user specifies a particular aircraft class from the INM data base, the model automatically provides the necessary inputs concerning aircraft power settings, speed, departure profiles, and noise levels. Since the INM data base does not contain noise level and aircraft performance data for crop dusters, this class of aircraft was modeled using information previously collected by BBA for a typical crop duster having a 600 h.p. radial engine and 2-bladed propeller.

The Firebaugh Airport consists of a single runway which is 3,100 feet long and 60 feet wide. Due to prevailing wind conditions in the area, aircraft operations flow to the northwest of Runway 30 approximately 99 percent of the time.

According to airport staff, there are currently about 1,200 annual operations at the airport or an average of about 3.3 operations per day. These are broken down into about 36 percent single engine propeller, 54 percent crop duster, 1 percent twin engine propeller, and 9 percent jet. Jet operations are due to a Learjet which is based at the airport.

Aircraft operations other than crop dusters mostly occur during the daytime hours between 7:00 a.m. and 7:00 p.m. It is estimated that only about one percent of such operations occur during the evening or nighttime hours between 7:00 p.m. and 7:00 a.m. For crop dusters, the distribution of flights is 20 percent from 7:00 a.m. to 7:00 p.m., 5 percent from 7:00 p.m. to 10:00 p.m., and 75 percent from 10:00 p.m. to 7:00 a.m.

Arrival and departure routes at the airport are primarily straight in and straight out with some aircraft making a left hand approach to Runway 30 or a right hand approach to Runway 12. Crop dusters generally turn toward their final destinations after having achieved an altitude of about 150 feet above ground level.

Figure VIII-1 shows the locations of the 60 and 65 dB CNEL contours for current operations at the airport. Since operations are not expected to increase significantly in the future, the contours may be used to assess potential noise-related land use conflicts with the airport for existing and future conditions.

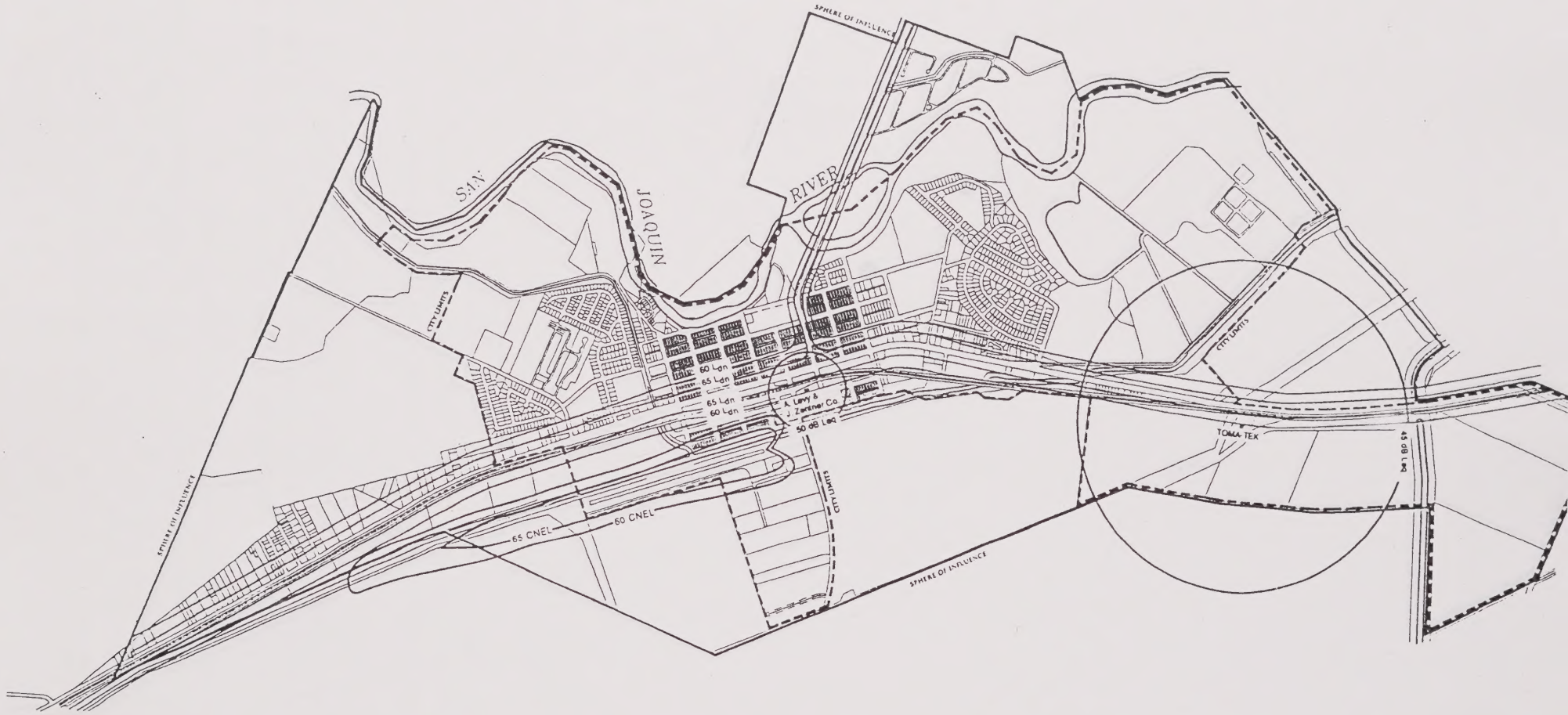
g. Community Noise Survey

A community noise survey was conducted in the City during July 1991 to document background noise levels in areas where noise-sensitive land uses are located. Short-term monitoring was conducted twice during the daytime (7:00 a.m. to 10:00 p.m.) and once during the nighttime (10:00 p.m. to 7:00 a.m.) so that estimates of the L_{dn} could be prepared. One long-term site was established to record the variation of noise levels through a full 24-hour period. The data collected during the survey included the L_{eq} and the observed minimum and maximum noise levels. Noise monitoring sites, measured noise levels and estimated L_{dn} values at each site are listed in Table VIII 3. Hourly variations in noise levels at the long-term monitoring site are shown in Figure VIII-3. Monitoring site locations are shown in Figure VIII-4.

Results of the community noise survey indicate that existing background noise levels in many areas of the City that contain noise-sensitive land uses are relatively quiet.

8. FINDINGS

- No land within Firebaugh is in a 100-year floodplain, but some areas are subject to localized flooding.
- Both structural and wildland fire hazards exist within the Sphere of Influence. The greatest potential structural fire hazard is from older and/or substandard structures in the City. The greatest potential wildland fire hazard is the brushy area along the San Joaquin River.

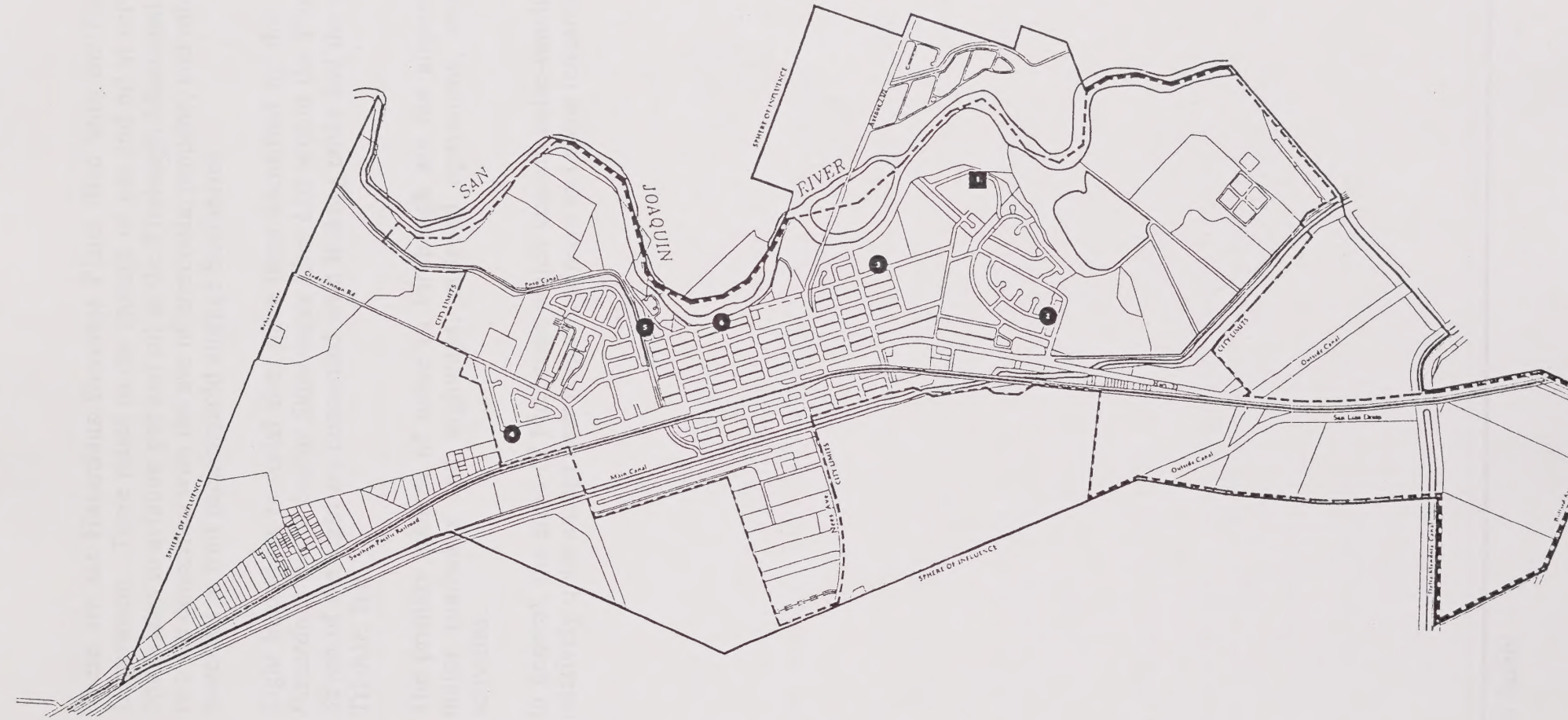


N

Scale: 0 800 ft

Future (2010) Noise Contours

Figure VIII-2



LEGEND

24-hour Monitoring Site

Short-term Monitoring Site

Noise Monitoring Site Locations

Figur

- There are six Hazardous Business Plans filed with the Firebaugh Fire Department. Three relate to the storage of gas and oil at service stations, one relates to aviation gas and oil at the Firebaugh Municipal Airport, and two are concerned with the use of ammonia, propane, and other hazardous materials at fruit packing/cold storage businesses.

- Eight hazardous material sites have been identified by the *March 1990 Hazardous Waste and/or Substances Sites List* within the Firebaugh SOI. Seven of the eight are concerned with leaking tanks and the eighth site is Tri-Air, Inc.

- The primary sources of noise in Firebaugh are the airport, traffic on major roadways and highways, railroad operations, and industrial activities.

- In general, the areas of Firebaugh which contain noise-sensitive uses are relatively quiet except near major roadways and some industrial areas.

GLOSSARY

A-Weighted Sound Level: All sound levels referred to in this policy document are in A-weighted decibels. A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

Community Noise Equivalent Level (CNEL): The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

Day/Night Average Sound Level (L_{dn}): The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

Equivalent Sound Level (L_{eq}): The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1-, 8- and 24-hour sample periods.

New Development: Projects requiring land use or building permits, but excluding remodeling or additions to existing structures.

Noise-Sensitive Land Use: Residential land uses, transient lodging, schools, libraries, churches, hospitals, and nursing homes.

Outdoor Activity Areas: Patios, decks, balconies, outdoor eating areas, swimming pool areas, yards of dwellings and other areas which have been designated for outdoor activities and recreation.

Stationary Noise Source: Any fixed or mobile source not preempted from local control by existing federal or state regulations. Examples of such sources include agricultural, industrial and commercial facilities and vehicle movements on private property.

Transportation Noise Source: Traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by existing federal or state regulations. However, the effects of noise from transportation sources may be controlled by regulating the location and design of adjacent land uses.

FLOODING HAZARDS SOURCES CONSULTED

Harkins, Peter, Staff Analyst III, Environmental Review Section, Department of Public Works and Development Services, Fresno County. Telephone Interview. November 1991.

Rabe, Fred, City Engineer, City of Firebaugh. Personal and Telephone Interviews. January-December 1991.

Sanderson, Richard E., Chief, Natural Hazards Division, Office of Natural and Technological Hazards, Federal Emergency Management Agency. Letter to Mayor Sean Howard, City of Firebaugh. August 2, 1982.

FIRE HAZARDS SOURCES CONSULTED

Borboa, John, Fire Chief, Volunteer Fire Department, City of Firebaugh. Telephone Interview. November 1991.

Buckles, Robert, Fire Captain, Madera County Department of Forestry and Fire Protection. Telephone Interview. November 1991.

TOXIC/HAZARDOUS MATERIALS SOURCES CONSULTED

Borboa, John, Fire Chief, Volunteer Fire Department, City of Firebaugh. Telephone Interview. February 1992.

California, State of, Office of Planning and Research, Office of Permit Assistance. *Hazardous Waste and Substances Sites List*. March 1990.

Sisson, Georgia, Environmental Health Analyst, Fresno County Department of Health. Telephone Interview. December 1991.

EMERGENCY RESPONSE SOURCES CONSULTED

Firebaugh, City of. *City of Firebaugh Emergency Plan*. June 1987.

NOISE SOURCES CONSULTED

California, State of, Department of Health Services. *Guidelines for the Preparation and Content of the Noise Elements of the General Plan. 1990* (included in the *1990 State of California General Plan Guidelines, State*, Office of Planning and Research.)

California, State of, Department of Health, Office of Noise Control. *Model Community Noise Control Ordinance*. April, 1977.

Federal Aviation Administration. *Integrated Noise Model Version 3.9.* October 1982.

Federal Highway Administration. *FHWA Highway Traffic Noise Prediction Model.* December 1978.

Hill, Sylvia, Office Manager, A. Levy and J. Zentner Co. Personal Interview. September 1991.

U. S. Environmental Protection Agency. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974.

U. S. Environmental Protection Agency. *Model Community Noise Control Ordinance.* September 1975.

Wilson, David, Director, Department of Public Works, City of Firebaugh. Telephone Interview. September 1991.

Wyle Laboratories. *Simplified Procedure for Assessment of Noise Emitted by On-line Railroad Operations.* March 1974.

SCENIC RESOURCES AND URBAN DESIGN

1. INTRODUCTION

This section describes the structure and appearance of Firebaugh's environment: both natural and man-made elements. The visual quality of the San Joaquin River is the major scenic resource in Firebaugh.

2. SETTING

Firebaugh is located on the northwestern edge of Fresno County, adjacent to the San Joaquin River. It is crisscrossed by several major canals and Highway 33 runs through the western portion of the community.

Most of the valley portion of the County, including Firebaugh and its SOI, has been leveled for agricultural use. Visually, it appears to have little topographic variation. Because of the flatness of the area, the surrounding agricultural uses which tend to form a shield around most urban development, and the mature landscaping within most older developed areas, most cities and communities tend to blend into their surroundings and are not particularly visible beyond their boundaries.

Because the agriculture around Firebaugh tends to be low-growing crops such as cotton, rice, tomatoes, and melons, the City does not blend into its environment to the same extent that cities surrounded by orchards might blend into their surroundings. It is only from the west that vegetation associated with the San Joaquin River serves as a transition from the agricultural uses to urban development.

3. SPHERE OF INFLUENCE

The Sphere of Influence of the City of Firebaugh extends from the San Joaquin River on the east to the Outside Canal on the west and from the Bullard Avenue alignment on the south to the Behymer Avenue alignment on the north. A small area located east of the San Joaquin River, encompassing an existing subdivision, is also within the City's sphere. The Sphere of Influence is primarily flat, except along the river where levees have been constructed to restrain the river during periods of heavy rain. The San Joaquin River, which defines much of the eastern boundary of the City's sphere, several large canals which traverse the area, and a man-made lake in the southern portion of the City are the primary surface hydrologic features. The visibility of these features is generally limited to

localized foreground views due to the flat topography, surrounding development, and vegetation screening.

There are four distinct types of vegetation which largely determine the aesthetic character of the area:

- agricultural croplands, primarily cotton and rice;
- riparian habitat along the river;
- the extensive tree cover within the developed portion of the City (parks and residential neighborhoods);
- other landscaping associated with residential development throughout the City.

Within the City, the predominant scenic resource is the San Joaquin River.

4. OVERALL URBAN PATTERN

The original Firebaugh townsite was laid out in a typical grid pattern and was generally bounded by Q Street, 15th street, L Street (Main Canal alignment), and 8th Street. It had one unique feature, however, in that the streets were all designed to be 80 feet wide. These wide streets are one of the most notable features of the older portions of the City. The City form is partially created by its location adjacent to the San Joaquin River, in that it tended to grow north and southward along the river. Because the San Joaquin River forms the boundary between Fresno and Madera Counties, annexation on the east side of the river is not feasible and development has been limited to the western side of the river in Fresno County.

The City form is also highly influenced by several man-made factors. The first of these is the Southern Pacific Railroad which runs more or less parallel to the San Joaquin River through Firebaugh. The road, which runs adjacent to the railroad on its western side, became a significant thoroughfare and became State Highway 33. Public access to the area west of Highway 33 and the Southern Pacific Railroad is limited to one street, Nees Avenue.

In addition to the constraints presented by the river, the railroad, and Highway 33, Firebaugh is also affected by several major canals which traverse the area. The Poso Canal runs through the northern portion of the City, with only one street (other than Highway 33) currently crossing it. The Main Canal runs along the western edge of the City and eventually turns eastward, in the southern portion of the City, and crosses Highway 33. The Outside Canal, which runs along the western edge of the Sphere of Influence also turns eastward and crosses Highway 33 in the southern portion of the City. Currently, only one

street, other than Highway 33, crosses both canals on the western side of the City and no streets cross the canals once they have turned eastward across Highway 33.

As a result of the constraints, development in Firebaugh has tended to move north and southward, with most new single family residential development occurring in the southern portion and multiple family residential development occurring in the northern portion of the City. Recently this pattern shifted slightly, in that almost all new residential development is occurring in the northern portion of the City. New development is following a curvilinear pattern rather than the traditional grid pattern and streets in the newer portions of the City are only 60 feet wide.

5. VISUAL RESOURCE/URBAN DESIGN DISTRICTS

a. Introduction

Land uses within the City are reasonably well organized and contained in several distinct areas. For purposes of analysis, the Sphere of Influence has been divided into five districts. These districts are defined primarily on the basis of the predominant land use and its attendant visual and urban character. These districts are detailed in the following subsections and their boundaries are shown in Figure IX-1.

b. The Central Business District

The Central Business District is generally bounded by Highway 33, Q Street, 12th Street, and 8th Street. The central area contains retail stores and offices, city hall, an elementary school, the community health center, the post office, a church, single and multiple family residences, and some vacant lots.

There is no overall building design, theme, or concept in the area. At some time in the past, the City attempted to create some feeling of unity and coherence by planting trees in pavement cutouts throughout the central area. Because of the variety of uses in the area, and the immaturity of the trees, however, the Central Business District has little visual coherence. There is no strong urban pattern or feeling of it being an attractive city center.

The Central Business District tends to blur at its edges, blending with the Historical Residential District on its south and northeast and with the Strip Commercial District on its west.

c. Highway 33 Strip Commercial

Commercial strip uses in Firebaugh are located on Highway 33 and consist of agricultural- and auto-related businesses. Although the east side of Highway 33

is almost totally developed, there is some vacant land on the west side of the road. Many of the buildings and structures along the road lack high visual quality.

d. Residential Areas

(1) Introduction

Residential areas are divided into four sub-districts: Historic Residential, Northern Residential, Southern Residential, and Del Rio.

(2) Historic Residential

This district was originally planned at the time of the town's founding, thus the street and block patterns in this area have been in place for many years. The original grid pattern provided for 80-foot wide streets, 150-foot deep lots, and 25-foot wide lots. Generally, two or more lots were combined for building purposes. Because of the lot depths, some corner lots were later subdivided and homes built on the rear portions. Residences in this district were built over a number of years, gradually filling in the established block pattern. The earliest homes in the area date back many years, but others are recently constructed. There are several lots on which more than one single family residence is located and there are a number of lots which contain one-story, multiple family residences varying from two to eight units. This district, therefore, contains a variety of housing types and scales.

Some non-residential uses including schools, parks, churches, a bank, two civic halls, and the courthouse are located in this area.

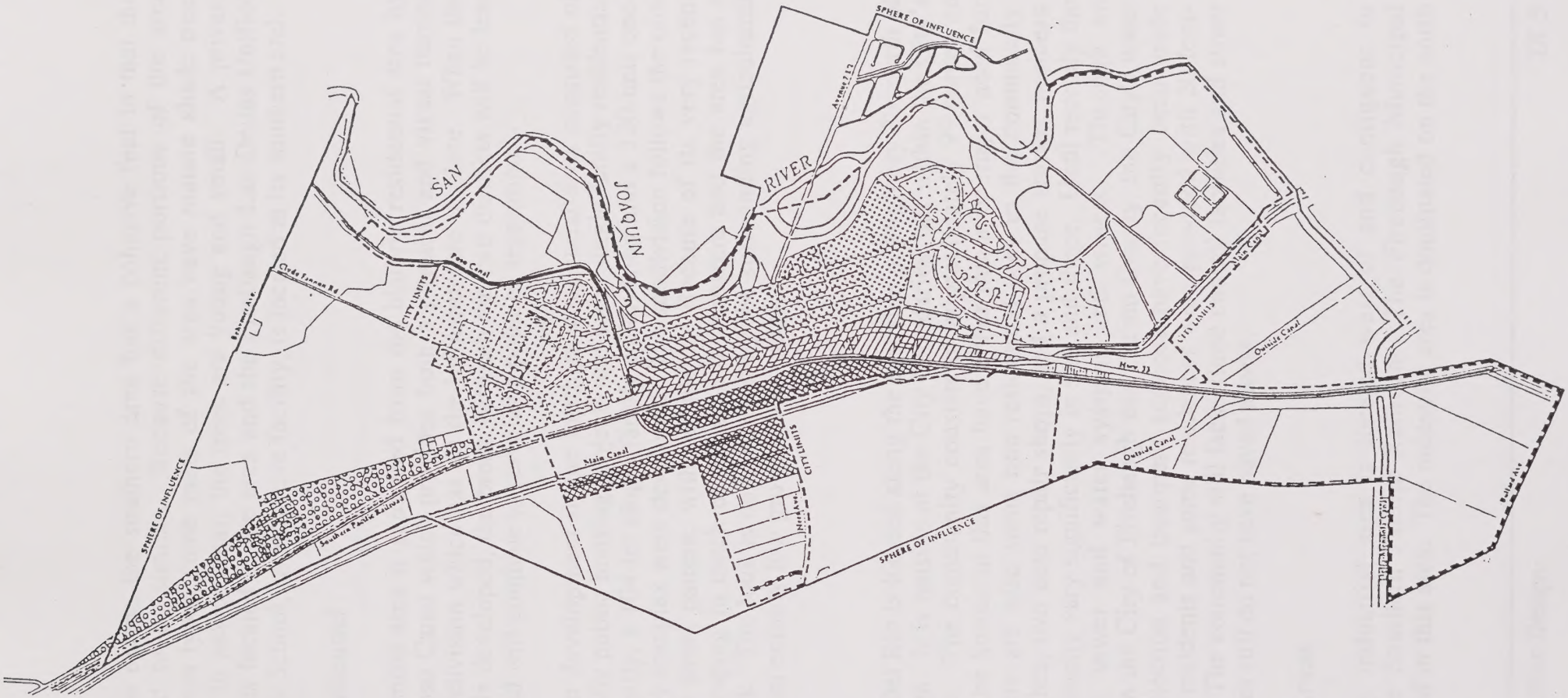
In this area, each block is divided by a paved alley which provides access to a number of garages, second units, and other backyard structures.

Mature street trees line the streets throughout these neighborhoods. These trees provide an important scenic amenity and serve to unify the neighborhoods

(3) Southern Residential

The southern residential area is a single family residential area. It has a distinctly different urban pattern and aesthetic character from the older development pattern. The clearly organized formal grid pattern of the historic residential district is replaced by informal, irregular block patterns with curving streets and many cul de sacs. There are no alleys in the area and each lot is separated by fences and walls.

The overall pattern of development in this area tends to follow the curve of the San Joaquin River. The area, as a whole, however, is not related or oriented to



LEGEND

- Northern Residential
- Southern Residential
- Historical Residential
- Del Rio
- Central Business District
- Strip Commercial
- Industrial

N

500 ft

Urban Design Districts

Figure IX-1

the river. To some extent, the southern area has a cohesive feel in that the housing types tend to be similar. Because different portions of the area developed at different types, some parts of the area have mature shade trees lining the streets. In newer areas, the trees are young and small. A private elementary school is located in the area and the Firebaugh Las-Deltas Unified School District High School, an attractive facility, is located at its southern end.

(4) Northern Residential

The northern residential area is separated from the historic residential area by two factors: the Poso Canal which provides both a physical and visual barrier and by a vacant subdivision which has all the infrastructure in place. When the vacant subdivision is developed, the break between the two districts will be less distinct, but the canal will continue to serve as a point of separation.

Until recently, most development in the northern residential area consisted of one-story multi-family public housing projects and some single family residential development. Recently, a 104-lot single family subdivision and a 120-unit one-story multiple family complex were developed. The subdivision follows the now familiar curvilinear street pattern, with no alleys. Because of its very recent construction, landscaping in much of the area is immature and the area has a very bare, open look. The look is compounded by the surrounding agricultural uses which are almost entirely low growing row crops.

(5) Del Rio

The community of Del Rio is located along the east side of Highway 33, north of the City of Firebaugh. It is outside of the City boundaries, but within the City's Sphere of Influence. The community consists of approximately 99 homes on 94 acres. Most of the homes in this area have either minor or major need for rehabilitation. There are also some non-residential uses in the community, including two churches, two auto repair shops, and a propane storage business. The lots in the community vary significantly in size and shape. Until recently the area lacked public sewer and water systems and streets. Through an arrangement between the City of Firebaugh and Fresno County, the City's water and wastewater collection and treatment services have recently been made available to Del Rio residents and some residences were provided with 20-foot-wide paved streets. The community still lacks flood control facilities and street lights and some homes still do not have paved access.

e. Industrial Areas

Firebaugh's primary industrial area is located west of and contiguous to Highway 33 and the Southern Pacific Railroad. The Firebaugh Municipal Airport is also located in this area. The industrial area is dominated on the north

end by the Union Ice cold storage business. The major industry at the south end is the Toma-Tek Tomato Processing Plant.

Development in the industrial area encompasses a number of single and multiple family residences. Much of the area is currently in agricultural use.

The industrial area constitutes an important element in the City's overall visual character because it is located along the primary north, south, and west entrances to town and has the largest structures in the City.

f. Agriculture

Almost all of the land surrounding the urbanized portion of Firebaugh is in agricultural use. The primary crops are cotton and rice, which are very low growing. The scenic quality of the agricultural area probably depends upon the attitude of the individual viewer. Some viewers undoubtedly consider the agricultural uses to be very scenic, particularly during the growing season; others may not consider them to have any scenic qualities.

On the west, the river serves as a natural boundary. There is, however, one rural subdivision located on the east side of the river. The subdivision has many mature trees which blend with the riparian habitat along the river. As Firebaugh is approached from the west, the trees and brush along the river are the most noticeable feature. They provide a natural break between the agricultural and urban uses.

As Firebaugh is approached from the other directions, however, the urban form appears on the horizon rather suddenly as the City is reached, with little transition between the agricultural area and the City. The appearance tends to be distinct and relatively abrupt.

6. PRIMARY CIRCULATION ROUTES AND CITY ENTRIES

Four major streets constitute the primary paths which serve the City's major districts: Highway 33, Fresno/Madera Avenue (Avenue 7 1/2), Nees Avenue, and Clyde Fannon Road.

The north and south entrances to the City are on Highway 33. The built environment along the highway does not support a clear sense of entry. The south end, which is within the City boundaries, is dominated by agriculture. As the urbanized area is reached, a mixture of residential, commercial, and industrial uses appear along the road. On the north end, the residences associated with Del Rio are scattered along the road for a considerable distance, blurring the entrance point of the City.

As the City is approached from the west, on Nees Avenue, the entrance to the City is clearly defined. Because this entrance is through the City's Industrial Area, it is not an aesthetically pleasing entrance.

Along Fresno-Madera Avenue, the entrance to the City occurs as the San Joaquin River is crossed. Because the road curves just before it crosses the river, the City is not visible until the bridge is reached. The City has made some effort to make this entrance more attractive. Trees have been planted along one side of the road. The other side has been developed with landscaping and a nicely designed public notice sign.

7. SCENIC HIGHWAYS

At the present time, there are no roads in the Sphere of Influence designated as or under consideration for designation as Scenic Highways.

8. FINDINGS

- Firebaugh's original townsite is characterized by a grid system with 80-foot wide streets.
- The San Joaquin River, on the east edge of the City, provides a high quality scenic amenity.
- The central business district area lacks visual cohesiveness.
- The original established block pattern of the Historical Residential District is clearly defined, bearing a strong, successful relationship to the City as a whole.
- The Poso Canal forms a physical and visual barrier between the northern and historical residential districts.
- The majority of the City's strip commercial development is modest in scale and generally unobtrusive. It tends to blend into the central business district.
- The large industrial area located along Highway 33 constitutes an important element in the City's visual character and does not intrude into the central business district. The visual relationship between this area and contiguous uses could benefit from a landscape treatment.
- North and south entrances on Highway 33 and the west City entrance on Nees Avenue warrant clarification and visual upgrading, primarily through landscape treatment.

- The agricultural lands that surround the City may be viewed by many residents as a highly scenic visual amenity.

APPENDIX 1

NOISE AND ITS EFFECTS ON PEOPLE

Fundamentals of Noise Assessment:

Noise is often defined simply as unwanted sound, and thus is a subjective reaction to characteristics of a physical phenomenon. The descriptors of community noise in current use are the results of many years of effort to translate objective measurements of sound into measures of subjective reaction to noise. Before elaborating on these descriptors, it is useful to discuss some fundamental concepts of sound.

Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, now called Hertz (Hz) by international agreement.

The speed of sound in air is approximately 770 miles per hour, or 1,130 feet/second. Knowing the speed and frequency of a sound, one may calculate its wavelength, the physical distance in air from one compression of the atmosphere to the next. An understanding of wavelength is useful in evaluating the effectiveness of physical noise control devices such as mufflers or barriers, which depend upon either absorbing or blocking sound waves to reduce sound levels.

To measure sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised.

The decibel scale uses the hearing threshold as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. Use of the decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. In the range of usual environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighting the frequency response of a sound level measurement device (called a sound level meter) by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Figure A-1 illustrates typical A-weighted sound levels due to recognizable sources.

It is common to describe community noise in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, and shows very good correlation with community response to noise.

Two composite noise descriptors are in common use today: L_{dn} and CNEL. The L_{dn} (day-night average level) is based upon the average hourly L_{eq} over a 24-hour day, with a +10 decibel weighting applied to nighttime (10:00 p.m. to 7:00 a.m.) L_{eq} values. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were subjectively twice as loud as daytime exposures. The CNEL (Community Noise Equivalent Level), like L_{dn}, is also based upon the weighted average hourly L_{eq} over a 24-hour day, except that an additional 4.77 decibel penalty is applied to evening (7:00 p.m. to 10:00 p.m.) hourly L_{eq} values.

The CNEL was developed for the California Airport Noise Regulations, and is applied specifically to airport/aircraft noise assessment. The L_{dn} scale is a simplification of the CNEL concept, but the two will usually agree, for a given situation, within 1 dB. Like the L_{eq}, these descriptors are also averages and tend to disguise variations in the noise environment. Because L_{dn} and CNEL presume increased evening or nighttime sensitivity, they are best applied as criteria for land uses where nighttime noise exposures are critical to the acceptability of the noise environment, such as residential developments.

FIGURE A-1

Examples of Noise Levels

Level, dBA	Activity	Subjective Evaluations
140	Sonic booms	Deafening
130	Threshold of pain	
120	Threshold of discomfort	
	Amplified music	
110	Commercial jet takeoff at 200 feet	
100	Auto horn at 10 feet	Very loud
90	Noisy factory interior	
	Heavy truck at 50 feet	
80	New automobile at 50 feet	Loud
70	Stenographic room	
60	Normal conversation at 6 feet	Moderate
50	Office interior	
40	Soft radio music	Faint
30	Residence interior	
20	Whisper at 6 feet	Very faint
10	Human breathing	
0	Threshold of audibility	

BBA

Noise in the community has often been cited as being a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from the interference with human activities such as sleep, speech, recreation, and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being is the basis for land use planning policies directed towards the prevention of exposure to excessive community noise levels. There are also economic affects of community noise: reduction in property values, inefficiency in the workplace and lost hours due to stress.

To control noise from existing fixed sources, many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be used as planning tools if applied to the potential creation of a nuisance, or to potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

<u>Criteria for Acceptable Noise Exposure</u>:

The *Guidelines for the Preparation and Content of the Noise Element of the General Plan* (Reference 1), includes recommendations for exterior and interior noise level standards to be used by local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The State *Guidelines* contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of L_{dn} or CNEL. An exterior noise environment of 50 to 60 dB L_{dn} or CNEL is considered to be "normally acceptable" for residential uses according to those guidelines. The recommendations in the State *Guidelines* also note that, under certain conditions, more restrictive standards may be appropriate. As an example, the standards for

quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect lower existing outdoor noise levels.

The U.S. Environmental Protection Agency (EPA) also prepared guidelines for community noise exposure in the publication *Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (Reference 2). These guidelines are based upon assumptions regarding acceptable noise levels which consider occupational noise exposure as well as noise exposure in the home. The guidelines recognize an exterior noise level of 55 dB L_{dn} as a goal to protect the public from hearing loss, activity interference, sleep disturbance and annoyance. The EPA notes, however, that this level is not a regulatory goal, but is a level defined by a negotiated scientific consensus without concern for economic and technological feasibility or the needs and desires of any particular community. The EPA and other governmental agencies have adopted suggested land use compatibility guidelines which indicate that residential noise exposures of 55 to 65 dB L_{dn} are within acceptable limits.

For control of noise nuisances, a community noise control ordinance is the most appropriate tool. The State Office of Noise Control has prepared a *Model Community Noise Control Ordinance* (Reference 3) which contains recommended noise standards in terms of "time-weighted" sound levels. The time-weighting concept allows discrimination of both short- and long-term noise exposures, and sets allowable levels for each. The *Model* recommends more stringent standards for residential land uses than for commercial and industrial, with the most stringent standards recommended for "rural suburban" situations. The primary exterior noise standard for rural residential uses is 50 dB in the daytime hours (7 a.m. to 10 p.m.), and 40 dB at night. The standard is expressed in terms of the level exceeded for 30 minutes of an hour, equivalent to the median level, or L50. This ordinance format is successfully applied in many California cities and counties.

The U.S. Environmental Protection Agency has also prepared a Model Community Noise Control Ordinance (Reference 4), using the "Equivalent A-weighted Sound Level" (L_{eq}) as the means of defining allowable noise level limits. The EPA model contains no specific recommendations for local noise level standards, but reports a range of L_{eq} values as adopted by various local jurisdictions. The mean daytime

noise standard reported by the EPA is 56.75 dB (L_{eq}); the mean nighttime noise standard is 51.76 dB (L_{eq}). This ordinance format has been successfully applied by the City and County of San Diego and by many other jurisdictions looking for a simplified approach to the enforcement of a local noise control ordinance.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, or droning or high-pitched sounds may be more annoying than the A-weighted sound level alone will suggest. Many noise standards apply a penalty, or correction, of 5 dB to such sounds. The effects of unusual tonal content will generally be more of a concern at nighttime, when residents may notice the sound in contrast to previously-experienced background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not audible previously. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the relative loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Table A-1 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise, or to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, the usual range of voice and interior noise levels. It is probably not directly applicable to public perception of identifiable intrusive noise sources in very quiet environments because of the difference in frequency content between background noise sources and intrusive sounds, as well as the fact that the absolute amount of energy required to make a given change in sound pressure level is much smaller at low noise levels than at higher levels. Table A-1 should therefore only be applied

in a general manner to show the relationship between changes in sound energy, sound pressure levels and subjective reaction.

The comparisons of subjective reaction outlined in Table A-1 are not applicable to noise exposures which are very quiet or very loud. For example, a whisper which is increased by 10 decibels, e.g., from 20 dB to 30 dB, remains a whisper, and would still be described as quiet. In contrast, an increase in the noise level of a diesel locomotive from 90 dB to 100 dB would be a change from a loud noise to a very loud noise. Thus the subjective reaction to a 10 dB change in either case may be different, even though the change in level is the same.

TABLE A-1

SUBJECTIVE REACTION TO CHANGES IN NOISE LEVELS OF SIMILAR SOURCES

Increase in Sound Pressure Level, dB	Relative Increase in Acoustical Energy	Subjective Reaction
1	1.26 times	Minimum Detectable Change (Lab)
3	2.0 times	Usually Noticeable Change
5	3.2 times	Definitely Noticeable Change
10	10.0 times	Twice as Loud as Before

Sources: Various, reported by Brown-Buntin Associates, Inc.